VA PLANS FOR AUTOMATED DATA PROCESSING, OFFICE AUTOMATION, AND TELECOMMUNICATIONS ACTIVITIES

HEARING

BEFORE THE

SUBCOMMITTEE ON
OVERSIGHT AND INVESTIGATIONS

OF THE

COMMITTEE ON VETERANS' AFFAIRS
HOUSE OF REPRESENTATIVES

NINETY-EIGHTH CONGRESS

SECOND SESSION

SEPTEMBER 11 AND 12, 1984

Printed for the use of the Committee on Veterans' Affairs

Serial No. 98-57

U.S. GOVERNMENT PRINTING OFFICE
39-703 O WASHINGTON : 1984

H761-11

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VA PLANS FOR AUTOMATED DATA PROCESSING, OFFICE AUTOMATION, AND TELECOMMUNICATIONS ACTIVITIES

TUESDAY, SEPTEMBER 11, 1984

House of Representatives,
Committee on Veterans' Affairs,
Subcommittee on Oversight and Investigations,
Washington, DC.

The subcommittee met, pursuant to notice, at 8:30 a.m., in room 334, Cannon House Office Building, Hon. G.V. (Sonny) Montgomery (chairman of the subcommittee) presiding.

Present: Representatives Montgomery, Hall, Penny, and Rowland.

Also present: Representatives Hammerschmidt and Mica.

OPENING STATEMENT OF CHAIRMAN MONTGOMERY

Mr. Montgomery. Good morning, 8:30 has arrived. The Subcommittee on Oversight and Investigations will come to order.

We are meeting to hear testimony from Veterans' Administration officials concerning their plans and activities in the use of automatic data processing, office automation, and telecommunications systems.

The subcommittee wants to hear about the Office of Data Management and Telecommunications organization, support responsibilities to other departments, and fiscal expenditures.

We also expect to hear about the ADP plans and activities of the Department of Veterans Benefits, including ADP personnel staffing and the enhancement of the TARGET system.

We are also looking into the Department of Medicine and Surgery ADP plans and activities, including the Medical Information Resources Office organization and staff, the status of the Decentralized Hospital Computer Program and the integrated hospital system.

Today and tomorrow we expect to hear testimony concerning the ADP sharing actions of the VA with the Department of Defense concerning the DOD tri-service medical information system in accordance with our sharing legislation, Public Law 97-174. And I might emphasize, really that is the main part of this hearing, that we certainly would like to encourage the DOD to take a look at the computer system that is now in place in our veterans hospitals and outpatient clinics.

When my distinguished colleague Mr. Hillis comes in, I will certainly yield to him for some remarks. I would like to thank a

Member of Congress from Georgia, Dr. Rowland, for being here this morning. He will preside at this subcommittee meeting in the next 30 or 40 minutes.

Dr. Rowland, do you have any comments before we start this automation hearing?

Dr. **Rowland**. No, thank you.

Mr. **Montgomery**. We would like to call our first witnesses and I'll let the subcommittee counsel indicate who those witnesses are.

Mr. **Shultz**. We will have the VA witnesses appear as a panel. So if all the individuals whose names are indicated on the witness list will come up and take your seats, we will appreciate it.

Mr. **Montgomery**. I would like the Deputy Administrator to introduce the Veterans' Administration personnel. We are always proud of our VA personnel. This veterans system is no better, Mr. Administrator, than the people you have surrounding you. We would like to welcome you here this morning. You may introduce those persons at the table. I usually don't like over 5 or 6 minutes of oral testimony but because this is detailed, complicated, and involved, we will allow up to 10 minutes for each person if they so desire.

STATEMENTS OF A PANEL CONSISTING OF HON. EVERETT ALVAREZ, JR., DEPUTY ADMINISTRATOR, VETERANS' ADMINISTRATION; DOROTHY L. STARBUCK, CHIEF BENEFITS DIRECTOR, DEPARTMENT OF VETERANS BENEFITS; D. EARL BROWN, JR., M.D., ASSOCIATE DEPUTY CHIEF MEDICAL DIRECTOR, DEPARTMENT OF MEDICINE AND SURGERY; JACK J. SHARKEY, DIRECTOR, OFFICE OF DATA MANAGEMENT AND TELECOMMUNICATIONS, ACCOMPANIED BY DOMINICK ONORATO, ASSOCIATE DEPUTY ADMINISTRATOR FOR INFORMATION RESOURCES MANAGEMENT; ROGER COOPER, DIRECTOR, MEDICAL INFORMATION RESOURCES MANAGEMENT OFFICE; AND RICHARD DAVIS, DIRECTOR OF INFORMATION SYSTEM OFFICE, VA MEDICAL CENTER, LEXINGTON, KY

STATEMENT OF HON. EVERETT ALVAREZ, JR.

Mr. **Alvarez**. Thank you, Mr. Chairman. We are pleased to appear before this subcommittee this morning to discuss the VA's plans and activities in the areas of automatic data processing, office automation, and telecommunications systems.

With me this morning, on my far right is Jack Sharkey, Director of the Office of Data Management and Telecommunications; Dorothy Starbuck, Chief Benefits Director, the Department of Veterans Benefits; Dominick Onorato, Associate Deputy Administrator for Information Resources Management. On my left, Dr. Earl Brown, Associate Deputy Chief Medical Director; on his left, Mr. Roger Cooper, Director of the Medical Information Resources Management Office, Department of Medicine and Surgery; and on his left, Dr. Davis, ADP Site Director from Lexington, KY.

I would like to summarize my prepared statement which was submitted for the record.

Mr. **Montgomery**. You may proceed. I appreciate Mr. Sam Hall of Texas, being here, a distinguished member of this committee. Do you have any comments before Mr. Alvarez presents his testimony, Mr. Hall?

Mr. HALL. Not at this point, Mr. Chairman.

Mr. MONTGOMERY. Thank you.

Mr. ALVAREZ. Thank you, Mr. Chairman.

Fundamental changes are currently occurring in the VA's ADP program. They result from changing needs, changing technology, and an emerging management philosophy which is focused on a broader and longer term view of the agency's ADP and telecommunications needs.

To fulfill the agency's mission and specific departmental objectives, we need a flexible and responsive range of ADP services. Consequently, our program includes both centralized and decentralized technology and skills. This combination will enable us to satisfy complex needs for information, respond to unique programmatic needs and services, and most effectively use technical resources and agency information. Complementary administrative changes include new policies, delegated authorities, and a planning and management system that permits us to identify our requirements. It is the emphasis upon an agency level program that I wish to outline today.

Following me, Miss Starbuck, Dr. Brown, and Mr. Sharkey will address more specifically the plans and activities of their respective organizations.

The mission of the Veterans' Administration is to serve America's veterans and their families with dignity and compassion and to be their principal advocate in ensuring that they receive the care, support, and recognition they have earned by serving our Nation.

In support of our mission it is the policy of the VA to acquire and use automatic data processing, office automation, and telecommunications technologies which will improve services and program management, and increase productivity.

The Associate Deputy Administrator for Information Resources Management has overall responsibility for developing and recommending ADP and telecommunications planning and policy to the Administrator. He coordinates the development of our agencywide ADP plan which is submitted annually to Congress.

Under my direction, the VA is continuing to review its ADP policies in coordination with departments and staff offices, to reflect the impact of technological changes on our users, and their increasingly active role in employing this technology.

New policies recently approved by the Administrator provide clearer definitions of responsibilities and accountability of department heads, associate deputy administrators, and staff office directors. The policy also establishes an ADP user group to provide a forum for sharing information and providing feedback on agency policy and plans.

The increasingly active role of the user is exemplified by the Administrator's delegation of authority to the Chief Medical Director to allow greater flexibility in managing ADP and VA medical centers. The Administrator has also delegated authority for the Chief Benefits Director to acquire personal computers for use in VA regional offices.

Our major automation priorities are: To continue introducing computers into VA medical centers under the Decentralized Hospital Computer Program;

To augment the Department of Veteran Benefits' TARGET System and redesign the insurance and loan guaranty systems to provide better service to our beneficiaries;

To facilitate the use of office automation and provide a vehicle for our departments and staff offices to acquire this technology, where appropriate, through an agency level contract;

To upgrade our computer systems at the Austin Data Processing Center to enhance access by our users to our centralized data bases; and

To provide a telecommunication utility to promote sharing and exchange of data.

In response to changing user needs and the growing ability to use ADP technology in new ways, we have developed a systematic approach to our ADP program. This approach focuses on three major management strategies.

First, our system design and integration management strategy promotes greater and more timely access to VA data. For example, in the Department of Medicine and Surgery and Department of Veteran Benefits information exchange project, we are developing a method to exchange medical and eligibility data between the departments. VA medical centers will then be able to access the benefits delivery network, using its data to determine patient eligibility for medical care.

Second, our telecommunications strategy focuses on the concept of VA data communications as a utility, available for all agency programs to access and transport data. While there are several networks in place today, including the dedicated TARGET network and the VA data transmission system, our strategy is to progressively integrate these services. In that way, we can address a wide range of VA needs through a cost-effective communications utility.

And, finally, our integrated computing support services strategy promotes the use of new and emerging technology to improve services and support organizational data needs. This strategy focuses on both centralized computer systems, and decentralized equipment and skills.

These strategies focus on agencywide data and technology sharing to complement our efforts and put technology in the hands of the end users.

Our goal is to provide on-line access for users to the centralized data bases so they can satisfy their own information needs with their distributed technology.

Mr. Chairman, this concludes my statement.

[The statement of Mr. Alvarez appears on p. 59.]

Mr. MONTGOMERY. Thank you, Mr. Administrator.

I think we will move ahead and hear the other statements, and then come back for questions. Miss Starbuck, I notice this is one of your longer statements—it's 4 pages long.

Miss STARBUCK. I'm slipping, Mr. Chairman.

Mr. MONTGOMERY. You what?

Miss STARBUCK. I'm slipping a bit on that.

Mr. MONTGOMERY. Not you.

STATEMENT OF DOROTHY L. STARBUCK

Miss STARBUCK. Good morning, Mr. Chairman.

I am very pleased to outline for you and the members of the committee the activities in the Department of Veterans benefits on data processing, office automation, and the interchange of data.

Our plans center basically on the systems which are now operative in the Department: the compensation, pension, and education, the loan guaranty, insurance, centralized accounts receivable, and the beneficiary identification and records locator system which is augmented by the VA discharge system. At the same time, the Department is moving toward office automation.

Within the Department there is now being established a staff element which will be designated as the information resources staff. This group will provide for the Department control and direction of all initiatives in automatic data processing, as well as office automation. This staff will relate to and work with data processing personnel in each of the Department's services as well as with its counterparts in the other departments and the Office of Data Management and Telecommunications.

I would like to touch very briefly on the immediate initiatives in each of the systems that are extant in the Department.

In the CP&E system we are working toward the realization of three major improvements: First, the generated awards for compensation and pension, which will complement the existing education award system. We anticipate installation of this capability in June 1985.

Second, the dedicated award printing, we look for implementation beginning in November to continue to completion by next June.

Third is overnight updating of the master record to displace the current cyclical update system. This is a step to get us eventually to online data-entry capability. Our efforts in this are just beginning.

We are also actively pursuing redesign of three major DVB systems to incorporate state-of-the-art technology. We have already achieved an online inquiry capability for our insurance system. Work is underway to provide online processing in that system. The effort in this should be completed by 1987.

We are redesigning our loan guaranty system. Here, too, we are going forward toward online access. The redesigned processing will be installed in phases over a 2-year period in 1986 and 1987.

Our BIRLS system, which is the basic records locator and identification system, is also being redesigned to take optimum advantage of online capabilities. The phased installation of this redesign is expected to be completed during 1986.

We have other initiatives in process which will streamline basic DVB operations. We are developing a revised system for controlling reviews of fiduciary accounts and we are now moving into the automation of the chapter 31 vocational rehabilitation payment system, which is now manual.

We are providing for increased interaction between basic DVB systems and the automated management information system. This will assist us in the quality and availability of management information, and assist in the planning processes in the Department.

Office automation has taken a high priority in DVB's planning. We have tested use of an office system in the Department and both at central office and three field stations. We have expanded the system to include seven additional stations. The Department expects to expand office automation capability to all DVB facilities in the fiscal year 1985 and 1986 timeframe.

This office automation effort includes the use of personal computers. The Department has procured in each of the regional offices, as well as central office, a number of personal computers and plans to make them an integral part of the office automation network.

Both DM&S and DVB have cooperated in a test of computer exchange of information involving the Albany Medical Center and the regional offices in New York City and Buffalo. This involves computer processing of requests for eligibility for hospital admission and notices of change in patient status. We anticipate that the regional office request for hospital examinations will also be automated. This particular test is an interim response to a specific need for expedited turnaround of information between the two departments and will be useful pending completion of plans now being developed by DM&S, DVB, and ODM&T which will link the hospital system with the CP&E system via the VADATS.

Mr. Chairman, the Department is continuing its efforts in consonance with the overall agency objectives as outlined by the Deputy Administrator, and we expect to realize the benefit of a more productive work force through automation.

This concludes my statement, Mr. Chairman, thank you.

[The statement of Miss Starbuck appears on p. 61.]

Mr. MONTGOMERY. Dr. Brown.

STATEMENT OF D. EARL BROWN, JR., M.D.

Dr. BROWN. Mr. Chairman and members of the subcommittee, I am pleased to appear before you today to discuss the Department of Medicine and Surgery's plans and activities in the use of automated data processing, office automation, and telecommunications system.

Providing modern computer capabilities to every medical center is one of our higher priorities. Computers are essential for the support of clinical and administrative functions of medical centers and to produce efficient and effective management information for all levels of DM&S.

Since February 1982, when the Administrator established a policy of decentralized computer operations for VA medical centers, DM&S has made great strides in the area of information resource management.

The Decentralized Hospital Computer Program [DHCP] was initiated to carry out the rapid deployment of computers to VA medical centers to first enhance priority clinical and administrative functions and then address other areas of support.

This effort has already produced impressive results. A substantial acceleration in our initial procurement/implementation strategy for the DHCP has made it possible to provide initial CORE equipment and software to all VA medical centers in 1984. In fiscal year 1985, we will be able to provide full CORE capabilities to all medical centers. With this, all will have as a minimum, medical administration, pharmacy, and clinical laboratory computer capabilities.

The enthusiasm, interest, and excitement being generated by DHCP, both within and external to the VA, is beyond our expectations. DHCP has contributed significantly to the high morale of our centers. We are also processing requests for information and copies of software on a daily basis. Government officials from Canada, Australia, and China have visited our medical centers and central office to learn more about the DHCP approach.

The Department of Defense has conducted extensive studies of our software. The Indian Health Services has conducted many site visits and they are evaluating plans for possible use of the VA developed software.

Another significant DM&S ADP activity is the integrated hospital system. The purpose of this congressionally mandated project is to test the applicability of commercially available hospital information systems to the VA hospital environment.

The VA medical centers in Philadelphia, PA, Saginaw, MI, and Big Spring, TX, have been selected as the prototype demonstration sites.

The integrated hospital systems test at the three sites begins this month, will cover a 2-year, 9-month period and will cost $19.7 million. An evaluation of the stand-alone integrated hospital systems at the three test sites will be conducted by Arthur Andersen & Co.

Mr. Chairman, that concludes my abbreviated statement.

Mr. MONTGOMERY. Thank you.

[The statement of Dr. Brown appears on p. 62.]

Mr. MONTGOMERY. Mr. Sharkey.

STATEMENT OF JACK J. SHARKEY

Mr. SHARKEY. Mr. Chairman and members of the subcommittee, I am pleased to appear before this subcommittee to discuss the Office of Data Management and Telecommunications' organization, support responsibilities to other departments and staff offices, and fiscal expenditures.

ODM&T's mission is to provide automated data processing and telecommunications support to all VA departments and staff offices. We provide a full range of support services, beginning with equipment planning. We are now replacing the large computers at the Austin Data Processing Center to provide improved data-access services for users.

We also operate computers in all the data processing centers, which process most of the agency's computer programs. These programs include payroll and personnel, which I might note that a recent GAO study found that the costs of operating nine Government payroll systems range from a low of $52 per file at the Veterans' Administration to a high of $374 per file in another Federal agency.

We also process centralized accounting for local management, compensation, pension, and education system. Other support activities include designing and developing computer applications systems, telecommunications services, long-range planning, and special studies to advise users about the latest technology and services available.

As you know, the Administrator has delegated the responsibility for management and control of DM&S medical applications processing to the Chief Medical Director. ODM&T maintains certain centralized systems for DM&S, such as the patient treatment file and fee basis systems, and provides other ADP and telecommunications support as requested by DM&S. DM&S prepares its own annual ADP and telecommunications plan, which is incorporated as a part of the agency plan.

ODM&T's telecommunications services include VA-wide technical management and support for all telecommunications systems. Examples of these systems are telephone systems, teletype systems, data transmission systems, and hospital-communications systems which include nurse call, radio paging, and closed circuit TV.

ODM&T has an average employment of 1,857, with approximately 425 employees located in the VA central office and the remainder in six field stations. The 1985 fiscal year budget authority is $81.5 million. Approximately 60 percent of this amount is for personnel. The remainder is for rent, communications, utilities, miscellaneous services, and equipment purchases.

ODM&T is organized functionally to support the VA's ADP and telecommunications management strategies described by Mr. Alvarez:

Systems design and integration management, to which 235 full-time equivalents are assigned in central office;

Telecommunications, to which 67 are assigned; and

Integrated computing support service, to which 113 are assigned.

ODM&T has three Associate Directors whose responsibilities correspond to the strategy areas. The Associate Director for Systems Design and Integration Management is responsible for designing and developing ADP systems to support VA programmatic needs. He allocates, manages, and controls ODM&T's central office personnel who design and develop ADP systems.

Some of the major systems supported by this directorate are the TARGET system, personnel and payroll system, automated beneficiary identification and records locator system, and the patient treatment file.

Other responsibilities include data base administration to minimize duplication, and data base design to promote information access and exchange among systems. For example, a major effort is underway to make DVB data bases, such as BIRLS and CP&E, available to DM&S and the Department of Memorial Affairs.

The Associate Director for Telecommunications supports the agency's telecommunications strategy. This directorate must provide user friendly communications interfaces to enhance access and sharing of information in agency data bases. In addition, this data must be transported efficiently and cost effectively. This responsibility is primarily manifested in the VA data transmission system [Vadats]. The VA assumed operational and management responsibility for VADATS from GSA on January 1, 1984. ODM&T has made significant strides in making this network operational, and expects to make the system fully operational in all VA sites by the end of December.

The Associate Director for ADP Policy and Operations Management is responsible for a wide range of support services to satisfy users' data access needs. In the rapidly changing world of ADP and telecommunications, an up-to-date policy is essential, so both ADP users and providers understand their respective roles.

This directorate develops and recommends to the Associate Deputy Administrator for Information Resources Management policy which keeps pace with the changing technological environment and the increasing sophistication of our users. In particular, VA policy promotes the capability and use of emerging user oriented technology, and user involvement in ADP and telecommunications planning and development.

We have established user groups to provide communications between users and providers of services, and provide a forum for feedback on agency policies, plans and other significant issues. Special user groups to focus on specific activities include the telecommunications user group and the time-sharing user group. VA-wide policy, while flexible, permits the agency to effectively manage its ADP and telecommunications resources.

ADP and telecommunications planning is another support service provided. Planning is done on several levels. Strategic planning ensures that we provide for agency long-range needs. Strategic planning begins with an examination of departmental goals and objectives. We then formulate strategies, such as those previously discussed, to support these goals and objectives. To assure that the strategies are efficiently and effectively implemented, we develop operational plans.

To encourage and enable VA employees to use the new personal computing technology to its fullest capabilities, we have opened an information technology center. The information technology center provides a wide range of personal computing services, including computer literacy and advanced end-user training in specialized computer applications and software packages. Other ITC services include consultation and technical assistance. The ITC can help VA offices select computer equipment and software packages best suited for their needs, and assist with ordering, installing, and maintaining the equipment.

Also, ODM&T is providing a vehicle to improve the integration and efficiency of purely administrative functions among VA organizations through an agency-level office automation acquisition.

As we assessed ODM&T's requirements for a comprehensive and versatile office automation and end-user computing capability, we found that many prospective users of these systems were interested in similar capabilities. In response, we developed and are currently nearing award of an office automation system contract, to be available for use by VA organizational elements. This contract will be a preferred means for acquiring office automation, but it will not be prescriptive. Our policy allows for special need, such as those of VA medical centers, to be addressed independent of the contract. Advantages of the contract include a guarantee of future expandability to take advantage of technical advances, current and future compatibility between office automation systems, and a significant cost incentive.

These initiatives, effectively integrated and managed, provide the framework for integrated systems design and effective telecommunications networking. Such services are needed to ensure that the information is available when and where needed by VA managers.

The applications systems designed by the central office staff are programmed and processed at the five data processing centers and a satellite service center. The largest agency data base, the compensation, pension and education data base, resides in the Hines, PA, and Los Angeles data processing centers. Another large data base, the BIRLS system, is located at the Austin data processing center, and the centralized accounts receivable system is located at the St. Paul data processing center.

The insurance system is run at the Philadelphia data processing center. Overall, the ODM&T data processing centers are involved in payment and collection of about $75 million per day.

We are continuing to upgrade the equipment and make software enhancements at our field activities to satisfy our users' needs for more responsive processing and information flow.

The Austin computer replacement initiative will provide significantly improved services to VA departments and staff offices. The soon-to-be-available contracts will put in place the modern technology, many tools and a progressively available capacity to improve end-user access to data.

We have recently made on-line inquiry to the insurance system available, and are in the process of providing on-line updating of veterans' policy information.

The TARGET network's host computers were recently upgraded, almost doubling the power of each so that we can satisfy current user needs.

The agency's payroll personnel system and management information system [AMIS] are being redesigned to allow local retention and use of data, while also making it available for agency use as necessary.

Mr. Chairman, thank you for this opportunity to discuss the ODM&T organization and mission with you.

[The statement of Mr. Sharkey appears on p. 65.]

Mr. MONTGOMERY. Thank you, Mr. Sharkey. I only have two questions before yielding to the other members.

You made a statement, Mr. Sharkey, about the cost of each file, and I can't see that in your statement. Will you make a clarification telling us where the $52 comes in and what agency—it costs $300 per copy.

Mr. SHARKEY. I am reading out of—this is a GAO study, and it says:

> The recent GAO study found that cost of operating the nine systems reviewed, that operating cost per file range from $52 at the Veterans' Administration, to a high of $374 at HUD. And the Army is $75; GSA, $77; Interior, $112; Energy is $212; NASA, $228; HUD, $374.

It's just an excerpt out of there.

Mr. MONTGOMERY. It costs that much to put a veteran——

Mr. **Sharkey**. No, sir, these are internal employees—what it costs per employee in the Veterans' Administration to administer our internal payroll and personnel system—$52 per individual.

Mr. **Montgomery** [continuing]. That's payroll from——

Mr. **Sharkey**. The internal VA employees payroll and personnel system.

Mr. **Montgomery** [continuing]. OK.

Mr. **Sharkey**. That's the PAID system, sir.

Mr. **Montgomery**. Mr. Administrator, I understand that you are head of all the computer programs, you coordinate them, and see that they are properly used and workable. Does that come under you as Assistant Administrator?

Mr. **Alvarez**. Yes, it does, Mr. Chairman. The coordinating role in the agency comes under the Associate Deputy Administrator for Information Resource Management, Mr. Onorato.

Mr. **Montgomery**. Under the DOD Trimis Program and the VA Department of Medicine and Surgery, back in 1978, there was a joint development to compare these automated support systems pertaining to health care. Has that been followed up, or what happened since that meeting several years ago? Is the DOD coming in and talking to you about their hospital system software computer usage?

Mr. **Alvarez**. Mr. Chairman, people in the Department of Medicine and Surgery have been working and meeting with the DOD. I would like Dr. Brown to address that question.

Dr. **Brown**. Mr. Chairman, we have been meeting regularly with DOD and we have exchanged some personnel to serve on specific committees. For example, Roger Cooper, to my left, has worked with DOD on some of their oversight committees to review the software development within the VA. We have been working very closely with them.

Mr. **Montgomery**. We met with Dr. Mayer and also his assistant. The bottom line, we were told, is if the system we have is better, they certainly will consider it. We picked up the rumor that they could spend over $1 billion in the DOD putting in a computer system in the hospitals on computers, whereas ours had already been in place, and they could learn a lot. This committee works very closely with the Armed Services Committee; in fact, Mr. Hillis and myself serve on Armed Services also. The military starts these people out—we pick them up as veterans. So I guess our concern is that we certainly don't want to spend an extra $1 billion out there if we have got the knowledge in VA and it will work for the hospitals of the military.

Are you working together?

Dr. **Brown**. Yes, sir; we are meeting regularly and comparing our systems. We also plan a meeting this fall to review our IHS as compared to their HIS system at a formal meeting. But we are meeting with them regularly, and they are reviewing our programs.

Mr. **Montgomery**. Are the hospitals similar, the VA hospitals and the military hospitals? Dr. Mayer was giving me the impression that we have different problems from what the Veterans' Administration hospitals have.

Dr. Brown. There are major differences in the hospitals, both from the standpoint of size—most of our hospitals are considerably larger than the military hospitals. Also, the clientele that we take care of are quite different. By and large, their population is a relatively healthy population. Our patients generally have multiple diagnoses. They require a lengthier stay in the hospital. In addition, there are differences in the turnover of personnel, of health care personnel. As you know, the military rotates their people periodically, and we have, in general, a very stable health care personnel population.

Mr. Montgomery. But could the computer systems—could the DOD learn from ours? What you know about the military hospitals, could our computers help them out, or be an advantage to them without spending a lot of money bringing in a new system?

Dr. Brown. I think so, sir.

Mr. Montgomery. One thing that you said probably ought to be corrected. The military hospitals in this area are treating more retired personnel, which are aged persons, than they are active duty at this time. So they are working in the aged field——

Dr. Brown. Yes, sir.

Mr. Montgomery [continuing]. In this area. Of course, I know other hospitals, maybe overseas and all, don't have that heavy retirement population.

Dr. Brown. That is true. They do have responsibility for taking care of—on an as-needed basis or as space available basis, retired personnel as well, and dependents.

Mr. Montgomery. Dr. Rowland?

Dr. Rowland. Thank you, Mr. Chairman.

Dr. Brown, I have two or three questions that I want to direct to you. It is my understanding that the VA has undertaken the demonstration of an integrated hospital system under the direction of the Committee on Appropriations, and the committee is aware that the cost of this demonstration has nearly tripled the $10.5 million that the VA estimated it would originally cost.

What is the present plan cost of the three tests that we now have under way? And will you make any recommendation to discontinue them if the cost continues to escalate?

Dr. Brown. I think the costs are pretty well set now with one variable. We have let the contracts with three different companies in order to install the equipment in three of our hospitals. The cost of those demonstrations is $19.7 million. In addition, we have let a contract with Arthur Andersen to do an evaluation of the integrated hospital system for $2.9 million. The only item that is at variance, or is subject to negotiation, is the subsequent comparison between DHCP and IHS. We expect to release an RFP in late 1985, at an estimated cost of a million dollars. But that is the only soft figure.

Dr. Rowland. This is almost twice the cost that it was thought to be originally. And some of this is contracting out also, isn't it?

Dr. Brown. I can explain the difference. Originally we estimated it at $10½ million.

Dr. Rowland. Yes.

Dr. Brown. However, that was based upon outdated information, 3- to 4-year old outdated information from VA consultant studies on a cost per patient basis. In addition, there are a number of things that have been added into the contracts which were not originally added in. For example, facilities management and a staff to support the system have been included in the RFP. Also included are site preparation, supplies, continued software support. In addition, the systems that were offered by the IHS vendors were considerably more mature and sophisticated than they were 4 years ago.

Of course another thing that has increased the cost is the addition of evaluation RFP's—Arthur Andersen and the other one which I mentioned. This is the explanation for the difference in our original estimate and what it is actually costing.

Dr. **Rowland.** Let's assume that these tests prove successful at the end of the 2-year and 9-month test period.

Dr. **Brown.** Yes, sir.

Dr. **Rowland.** Would the VA then discard the DHCP system that is already fully implemented in another 169 hospitals?

Dr. **Brown.** I don't believe so. I think that the DHCP is already proving itself to be very successful. Of course, at the end of the test period, the 2 years and 9 months, we will have several options: We can either eliminate the IHS system and install DHCP in those three hospitals; or, if it looks good, if it looks like it offers considerably more than we have, we can expand the IHS-type system.

Dr. **Rowland.** I understand that DM&S is looking at a management information system for the future. In your own ADP plan, the comment is made that systems such as Amis, and PAID, and the PTF are unreliable and do not provide local managers with timely data to support modern hospital management in strategic planning.

Can't you use the DHCP to produce data for local use and for generating more reports that might be needed here in Washington?

Dr. **Brown.** Yes, sir; we have already taken that step. We have put into the DHCP computers the capability of generating both the AMIS and the PTF data automatically. In addition, any management information system that we intend to install will take information that is already in the DHCP computers and simply use it for management purposes. We don't intend to reinvent another system.

Dr. **Rowland.** There's a task force reviewing the automated management information system at the same time a task force is studying the decentralized medical management system. Is that right?

Also, does the award of a contract for an integrated hospital system have any bearing on this topic of management information systems?

Dr. **Brown.** To answer your last question first, it was included in the RFP of the integrated hospital systems that they must have the capability of generating the same type of information as our DHCP computers. In other words, it was in the RFP that they have to generate the information for PTF and AMIS data.

Your question before that—there is one task force in DM&S, studying management information systems. That task force has just begun its work. They started by studying the information needs at every level, including the hospital director, the regional director, and central office. After they assess those needs, they are looking into ways of producing that information from the information that is collected in the DHCP computers.

We also have three test sites that where we are running local management tests for what the director needs in order to manage his hospital successfully. That information then will be the same information that will be collected and sent for the regional directors use and also for central office use.

Dr. **Rowland**. I see my time is expired. I have a couple of additional questions but I will wait until later.

Mr. **Montgomery**. All right, and I am going to ask you to preside in about 10 or 15 minutes. Mr. Hall?

Mr. **Hall**. Thank you, Mr. Chairman.

Mr. Alvarez, you indicate that the role of users is becoming increasingly active in your statement. The MIRMO people and part of DM&S have a lot to do with putting the medical application into place. Now, do you have a similar group in the Department of Veterans' Benefits which could give the Chief Benefits Director some degree of control? In other words, does Dorothy Starbuck have such a group under her control, and doesn't she need one if she doesn't?

Mr. **Alvarez**. Mr. Hall, the Department of Veterans' Benefits is currently staffing a group to provide Miss Starbuck with the type of support that MIRMO does for DM&S. This new office will take the lead in outlining ADP policy and in planning the automation efforts in the Department of Veterans' Benefits. Miss Starbuck can clarify this for you.

Mr. **Hall**. Now, is all of that at the present time being handled under Mr. Sharkey's supervision?

Mr. **Alvarez**. Currently Mr. Sharkey's office provides systemwide support for the Department of Veterans' Benefits.

Mr. **Hall**. Now, is that working as efficiently as it should in that way, or would it be more efficient if Miss Starbuck had that capability within her department?

Mr. **Alvarez**. We are currently reviewing this. That is one reason why we are establishing an office within the Department of Veterans' Benefits. Dorothy, do you have any further comments?

Miss **Starbuck**. Mr. Hall, we anticipate that we will have designated, hopefully this week, the person who will head that group. Because of the staffing limitations in the Department, the core group will be very small to begin with. We anticipate a staffing of five only in his immediate office, or hers, I guess I should say.

Mr. **Hall**. I assume that you would like to have the programmers and system analysts in your department?

Miss **Starbuck**. We have in each of our services program specialists who write program specifications. Once those program specifications are developed, then they are turned over to the Department of Data Management for technical specifications. It would be our aim in the eventuality to place within the jurisdiction of the Department of Veterans' Benefits the combination of program and technical computer services so that we could in effect be the masters of setting the priorities for installation of improvements or additional equipment.

Mr. **Hall**. Now, if you had that in your Department, there is no duplication of effort by you having it, and Mr. Sharkey having it, and whoever else may need it for their particular purposes, is there?

Miss STARBUCK. No, sir; there would not be.

Mr. HALL. Well, then, I take your answer is that you would like to have the programmers and the system analysts in your Department?

Miss STARBUCK. That is correct, Mr. Hall.

Mr. HALL. Do you think that the test that is being made now, the study that Mr. Alvarez mentioned, is going to put that in your office, or under your supervision?

Miss STARBUCK. Well, without saying a flat yes or no, I think that is the direction in which we are going, Mr. Hall.

Mr. HALL. How long do you think you will go in that direction before some finality has been reached?

Miss STARBUCK. I would hope that we would not go more than another 6 to 9 months.

Mr. HALL. How long has it been under study now?

Mr. ALVAREZ. It is just current, Mr. Hall, this effort was just currently begun a couple of months ago.

Mr. HALL. It will take 11 months to complete the study?

Miss STARBUCK. No; I was looking at 11 months to complete any changes that might be made.

Mr. HALL. I thought that Mr. Alvarez said that there is a study underway now to determine whether or not these program analysts will be placed in Miss Starbuck's division.

Mr. ALVAREZ. No, sir, my comment was that we are currently staffing an office within the Department of Veterans' Benefits to determine what is the best way to go with the Department's automation efforts and outline automation policies for DVB. From that, we expect other steps to proceed such as what organizational structure best fits DVB's requirements.

Mr. HALL. Why should it take a year to do that?

Mr. ALVAREZ. I am not sure it will take a year. We just started staffing the office only about 2 months ago, and I am not quite sure how long it will take.

Miss STARBUCK. We would anticipate, Mr. Hall, having the Director of the office and his immediate staff, I would think, approved within the next—at the outside, 3 weeks. The individual who will head this—the person who has been recommended is coming in from outside the agency, and he will need a little startup time.

Mr. HALL. Is it a fair statement to make—and I know my time is over—is it a fair statement to make that unless you have the programmers and system analysts in your Department you will not be able to be as efficient in your operation as you would like to be?

Miss STARBUCK. That is a fair statement, Mr. Hall.

Mr. HALL. Thank you. I yield back the balance of my time.

Mr. MONTGOMERY. Thank you, Mr. Hall. Before yielding to Mr. Penny of Minnesota, let me ask this question, following up on the testing programs that Mr. Hall is talking about. The House Appropriations Committee, in their wisdom, ordered the Veterans' Administration to test computers in three hospitals over a 10-year period at a cost of $56 million. Is that correct?

Mr. ALVAREZ. Mr. Chairman, I think the costs are $55 million for a 10-year period.

Mr. MONTGOMERY. OK, $55 million.

Either you, Mr. Alvarez, or Dr. Brown, you didn't request this test through this committee; is that correct, Dr. Brown?

Dr. BROWN. That is accurate, sir.

Mr. MONTGOMERY. Do you think we really need the test and is it a waste of money?

Dr. BROWN. Mr. Chairman, I think it is wise to keep informed as to what is available in the industry. I think it is also wise to keep our options open and, therefore, I would think that it would be well to continue with this test and see it through, and see what the comparison will be.

Mr. MONTGOMERY. Did the Appropriations Committee put $55 million additional into the funding of this program or does it come out of what you have to run the hospitals and for hospital care?

Dr. BROWN. No, sir; they did not put $55 million into this program. That is a 10-year life cycle cost, and if you would like some specific data on it, we can provide that.

[Subsequently, the Veterans' Administration furnished the following information:]

The $55 million is the 10 year life cycle cost for IHS. The only years funded are for FY84 and FY85. Subsequent funding for IHS for FY86-FY93 will be handled through the budget process.

Mr. MONTGOMERY. I hope they were right. You can treat a lot of veterans for $55 million.

Mr. Penny.

Mr. PENNY. Mr. Chairman, I would like to direct my questions to Dr. Brown's associate, Mr. Cooper, if I might.

First of all, I would like to find out if an analysis has been done of the planned workload at the Verification and Development Centers and the actual work that is being performed there.

Mr. COOPER. Mr. Penny, yes, we have looked at the workload. As you know, we have had a very ambitious schedule for the last year for the verification and development centers. We are understaffed at the verification and development centers. We have taken some immediate efforts this year to advance 64 individual slots for the verification development centers to augment their 96 FTE onboard right now.

We have also taken some actions in the budgets to address that issue in 1986 and we have some plans further out. I think it is a fair statement to make that the V&DC's at this point are understaffed for their efforts.

Mr. PENNY. What do you have as a current staff in your VDC's—the current staff number?

Mr. COOPER. The onboard strength today is 91, onboard for the six verification and development centers.

Mr. PENNY. Ninety-one at the six?

Mr. COOPER. That is correct.

Mr. PENNY. That's your grand total. And you are trying to reprogram 64 more?

Mr. COOPER. We have reprogrammed——

Mr. PENNY. What you mean by reprogrammed is take them from somewhere else?

Dr. BROWN. Mr. Penny, if I may, I will answer that one.

There are currently 96 FTE approved for the V&D centers. There are currently 91 people and five vacancies. We are concerned because we know that they are overworked and understaffed. They are due to receive additional personnel as we close out some other systems. Over the next 18 months, they are due to have some FTE transfer to the V&D centers to assist them. The AHIS and the Honeywell systems are folding, and those people will be moved. But that is going to take approximately 18 months to accomplish.

Mr. Penny. How long?

Dr. Brown. Eighteen months. However, because we recognize that their problems are now, and they are very busy now, and we need to make sure that these DHCP installations are successful, we are advancing them 64 FTE so that they can go ahead and hire now—these will be nonrecurring FTE—and then when they get the other FTE transferred they will have the people already onboard. So we recognize that they have a problem and we are giving them 64 FTE right away.

Mr. Penny. That is right away, and how many more to follow then?

Dr. Brown. I don't know how many to follow.

Mr. Penny. But the point is you are getting them 64 in addition to the 91 right away.

Dr. Brown. That is right. The 64 will be given to them as——

Mr. Penny. And then there is a reprogramming to shift staff that are apparently not needed elsewhere into this division as time goes by?

Dr. Brown [continuing]. That is right. There will be additional personnel. The reason I didn't answer your question is because it is budget information and it is embargoed.

Mr. Penny. Just as important, I think, as the number of people you have there, is how many of them are trained in the MUMPS language. Do you have the statistics on that?

Mr. Cooper. Yes, we do. At the VDC's, for journeyman level at Albany VDC, we have five journeymen; at the Washington VDC, four journeymen level; Birmingham, four journeymen level; the Hines VDC, six; Salt Lake City, four; and San Francisco, two. They are fully qualified MUMPS programmers who we feel we have no training requirements at all to bring them up to very effective production.

Mr. Penny. Were all of those individuals—I don't know exactly how many that totals, about 20 or 25—involved in the development of the Decentralized Hospital Computer Program?

Mr. Cooper. I would say of those journeymen, we are talking about 85 percent were onboard when we started the program 2 years ago. Another 15 percent have been additions in that period of time.

Mr. Penny. Pardon me if I missed it, but did you mention at all yet the number of personnel at the Medical Information Resource Management Office?

Mr. Cooper. No, I haven't. We have onboard 57 FTE.

Mr. Penny. Fifty-seven?

In view of a shortage of MUMPS qualified personnel and DM&S, do you have any plans to consider the proposal of the Applied Management Science Corp. to provide temporary personnel support to DM&S?

Mr. Cooper. We have taken a look at the proposal. I am not convinced that that particular proposal is the vehicle, but I think the concept is good. What we are talking about is some way to provide an overflow capability for the VDC's. I think a contractual vehicle which allows the VDC's to write tasking orders against a centralized contract is probably a good option, and we are looking at it at this point in time. We should get a resolution on that, I would think, within the next 1 to 2 months.

Mr. Penny. Mr. Chairman, I see my time has run out. I have a couple of other questions but I can hold on those.

Dr. Rowland [presiding]. We will come back.

Mr. Mica?

Mr. Mica. Thank you, Mr. Chairman, a few brief questions I would like to get on the record.

First, Miss Starbuck, I understand you are automating this chapter 31 location rehabilitation payment system. When will it be completed?

Miss Starbuck. The work has just begun on that, Mr. Mica, and I would hope that within 2 years that would be an automated system.

Mr. Mica. Two years?

Miss Starbuck. Yes, sir.

Mr. Mica. How many chapter 31 payees are there a year?

Miss Starbuck. On the year, probably we are looking at about 25,000—25,000 to 30,000.

Mr. Mica. About 25,000 to 30,000 a year. How much is this total program going to cost?

Miss Starbuck. I am sorry, I don't know that offhand. I could provide that information to you for the record.

Mr. Mica. Does anyone there know?

[No response.]

Mr. Mica. Mr. Chairman, I would like to have that provided for the record.

Miss Starbuck. We will be pleased to do so.

[Subsequently the Veterans' Administration furnished the following information:]

The estimated total cost to install Phase II of Chapter 31 target processing is as follows:

	1985	1986
Average Employment	19	19
Administrative cost	$711,300	$689,400

Mr. Mica. Mr. Sharkey, how many full-time equivalents are being used in support of the DM&S functions and ODM&T?

Mr. Sharkey. There are two sets of categories of people that support DM&S. One is under what we call our common services agreement wherein we provide support to the entire Agency for systems such as payroll, personnel, fiscal accounting, and centralized accounting for local management. These are systems that support all of the Agency. And for that we receive reimbursement from the medical care and MAMOE accounts of approximately $10 million as their portion of the support in those common systems that support all of the Agency.

We have approximately 105 personnel assigned to centralized automated systems which support DM&S Programs such as the patient treatment file, fee basis, and Vietnam veterans readjustment counseling.

Mr. MICA. Do you have a combined cost on the personnel?

Mr. SHARKEY. I am sorry, sir?

Mr. MICA. How much money is being spent total on these personnel? Do you break down the two categories?

Mr. SHARKEY. Yes, sir. In the common services, as I say, we bill, in essence, the Department of Medicine and Surgery a little over $10 million. The 105 positions are in the general operating expenditure account.

Mr. MICA. Let me ask you this: In the past year in ODM&T how many contracts in ADP has been let? How many contracts have you let?

Mr. SHARKEY. In 1984, we estimated that the contracts are worth $25.5 million, of which $16.3 million are for equipment, equipment maintenance, rental, and services of $9.2 million.

Mr. MICA. $9.2 million, services——

Mr. SHARKEY. $16.3 million for equipment.

Mr. MICA [continuing]. I understand that, I have been told by staff, that in ODM&T there are 326 employees in grade 11 through 15. Is that a correct figure—325, 326?

Mr. SHARKEY. I will have to supply that for the record, sir, I don't have it right handy with me.

[Subsequently the Veterans' Administration furnished the following information:]

Effective August 31, 1984, ODM&T had 802 employees in grades GS-11 through GS/GM-15 on duty. Central Office had 273, and the field stations had 529. The grade level breakdown is:

	Central office	Field stations	Total
GS-11	36	198	234
GS-12	69	232	301
GS-13	106	20	126
GS-13	12	60	72
GS-14	41	14	55
GS-15	9	5	14
Total	273	529	802

Mr. MICA. Does anyone else know?

Mr. SHARKEY. I can get it.

Mr. MICA. How about a ball park, is that about right?

Mr. SHARKEY. I would say——

Mr. MICA. The point is, if you have that many in that category, why can't some of those people be used in those areas—specialized areas—that you have contracted out?

Mr. SHARKEY [continuing]. We use contracts in areas which we believe we most effectively can use the contractors. We use contractors very heavily in such activities as data entry, computer output microfiche, and some operations. When we have very heavy peak workloads, we use a requirements-type contract where we can go out and hire programmers, as Roger Cooper mentioned earlier, to support the VDC's.

To me it is very critical to have the systems designers on board all the time so that when a system fails, the designers who know how the system works, get in there and fix it. Many times when systems design is contracted out, the system designers walk out the door when the contract ends and you sometimes have difficulty in figuring out what happened within the system.

Mr. MICA. Thank you, Mr. Chairman, I see my time is up. If I may just take the liberty to make two brief comments.

First, Miss Starbuck, after 4 or 5 years, I have seen you try your very best to do a good job and get a little extra help. I am considering the "Starbuck Relief Act" for specific legislation to give you all the help you need because I know you have done a tremendous job.

Miss STARBUCK. Thank you very much, Mr. Mica.

Mr. MICA. I don't know whether we ought to do that in law but, nonetheless, I must close with this comment. There are still 5,000 veterans a month moving into the State of Florida.

Thank you, Mr. Chairman.

Dr. ROWLAND. Thank you, Mr. Mica.

Mr. Alvarez, in your 1985 fiscal year budget request there were no additional FTE requested for the decentralized system, which is expanding rapidly, but yet you requested 22 FTE for ODM&T. I thought that we were trying to move more toward a decentralized system.

Can you explain to me the rationale of this?

Mr. ALVAREZ. Your question, sir, concerns specifically the 22 FTE requested for ODM&T?

Dr. ROWLAND. There were none for the decentralized program, but yet 22 for the ODM&T system?

Mr. ALVAREZ. I need some help there from Dr. Brown and Mr. Sharkey, but in general when we submitted our 1985 budget request, a primary concern and our real focus was to make sure that the decentralized hospital computer effort was going to be successful. Within DM&S those aspects were considered and resource requirements were deliberated. My understanding is that DM&S has the resources required.

I believe the 22 additional FTE for ODM&T were in support of other new initiatives. Is that correct, Jack?

Mr. SHARKEY. Yes, sir; two of them were for the automated budget service, two were for the Department of Memorial Affairs information processing system, two were for local area network, and the remainder, the 16, were the annualization of the advance records system personnel that we picked up from the General Services Administration. So in essence there was only six added to ODM&T.

Dr. ROWLAND. Mr. Alvarez, in your opening statement you stated that we wanted to move toward improving our centralized and decentralized system. I have the feeling that maybe we are doing more in our centralized than we are in our decentralized system. Would that assessment be incorrect?

Mr. **Alvarez**. That is incorrect, sir. When I say we are doing more in both our centralized and our decentralized systems what we are basically looking at is a distributed system. When you focus on the decentralized aspect, you are looking at decentralized capabilities for our field users to have access to the type of information they need but which is stored in our centralized systems. The improvement of that capability is one of the efforts we are emphasizing.

In addition, we still have a need for a good pool of centralized data to which users can gain access through various feeders such as Vadats. The effort is to improve the quality of information on the data bases that we maintain centrally. For example, we want to have information from our payroll and personnel system readily accessible to those who need it at the various levels.

Dr. **Rowland**. Let me ask you this: The VA has established a policy to ensure that all the computer systems, new computer systems, are compatible with the major existing systems, and are capable of providing inactive transfer of information. Is that correct?

Mr. **Alvarez**. That is correct, sir.

Dr. **Rowland**. And you are working on that now to be sure that that is implemented?

Mr. **Alvarez**. We have set policy to make sure that is implemented, and that the capability to transfer information will exist.

Dr. **Rowland**. Let me ask you this, Dr. Brown: In your plans to meet the office automation needs of DM&S field facilities, will you emphasize the compatibility with the DHCP in your selection criteria?

Dr. **Brown**. Yes, sir. As a matter of fact, we are building on the DHCP, and the data that is already in the DHCP computers.

Dr. **Rowland**. One other thing that I want to ask you, Dr. Brown: What is the status of the central data streamlining work group review of the 100 DM&S maintained by the ODM&T which could be examined for possible elimination or transfer to the DHCP system?

Dr. **Brown**. I will pass that to Roger Cooper if I may.

Mr. **Cooper**. Yes, sir; we have been meeting for the last 9 months on that particular issue and we have targeted several systems for elimination or significant reductions. As soon as we finish deliberations within the Department, we will sit down and negotiate with ODM&T and any other users of the system. Most of these systems we are discussing are strictly DM&S systems, so we probably will not have a lot of dialog with other departments.

I would think that we will get some resolution within 90 days in terms of eliminating actual systems.

Dr. **Rowland**. Thank you.

Mr. Penny?

Mr. **Penny**. I just have two additional questions for Mr. Cooper.

Has MIRMO initiated a plan to analyze and rearrange the VA MUMPS dictionary to fit the needs of the integrated hospital system?

Mr. **Cooper**. In terms of actually integrating the system into the MUMPS dictionary, we have not. Our basic contractual requirement in the IHS is to support the existing centralized systems like PAID, and PTF, and AMIS. The ability of the IHS to interface with those particular data bases is an option in the contract. But at this point, since we have not established a central depository for any of this information other than the existing PTF and AMIS systems, we did not put that in the contract.

Mr. PENNY. Second, what is the estimated total cost of the IHS if it were to be implemented in all hospitals?

Mr. COOPER. It is very difficult to estimate that. The way the contract was established, any additional expansion over the existing three sites would be subject to negotiation with the vendor in terms of how many you did. Economies of scale would be important. If you did 50 of them of a particular vendor, obviously you have a different pricing structure than if you only did one extra one.

Mr. PENNY. Do you have any ballpark figure if we were to institute that system across the Nation?

Mr. COOPER. I think that if you did a linear extrapolation, you have got the worst case scenario—I think, obviously, economies of scale would be great if you exercised the option in some quantity. If you only bought one or two other systems from the vendors, I think you probably would not see much economy of scale. But obviously the systems are fairly expensive relative to some of the other things we are doing. So I think that something less than a linear extrapolation of what we paid for the three systems would probably be the outside costs.

Mr. PENNY. OK. Thank you. I was just looking to see if anyone else is going to jump in because at one point in time others looked as if they were anxious to get involved in that answer, but I think it satisfies my interest. Thank you.

Dr. ROWLAND. Mr. Mica.

Mr. MICA. Thank you, Mr. Chairman, just a few general information questions.

How far does the compatibility requirement go down the system? Is the local pharmacy in the hospital tied into compatibility that is part of the regional system?

Mr. ALVAREZ. Could I begin, Mr. Mica?

Compatibility with respect to equipment is, I think, necessary to a point. Our technicians and Mr. Sharkey can address that better than I, but the main issue is the accessibility of information. As long as the information is reachable, I think you depend less on compatibility of equipment and more on the ability to extract that information when you need it. I think that is one reason why we were so optimistic about the transfer of information between the Department of Medicine and Surgery and the Department of Veterans Benefits, for example, the ability to transfer information from the TARGET network back and forth to our hospitals.

Mr. MICA. But does pharmacy, for instance? In other words, information on patients getting drugs and assistance through pharmacy in a hospital in one part of the State—is that information available in a region or in the national office?

Dr. BROWN. It isn't now, but we are looking to that. The first step, of course, is to put it into the hospitals and make sure that one hospital pharmacy can communicate with another in order to pick up drug incompatibilities or multiple prescriptions, or such as that. That is already being done.

Mr. MICA. That will be regionally based and compatible?

Dr. BROWN. Well, we haven't gone that far yet. You know, what we are going to extract on a regional basis will be different information. What we are doing is trying to at least enable the district hospitals to communicate with one another first.

Mr. MICA. Sure.

Dr. BROWN. And then where patients cross district lines, we will make sure that that is compatible as well—that there is an information exchange. But we are looking at that specifically in pharmacy because it is very important there.

Mr. MICA. Obviously, and that is one of the points that has been brought to my attention that there has been a great deal of problem particularly again in our State but throughout the country where they go from pharmacy to pharmacy and improperly having prescriptions filled.

Along that same line, the goal, then, is to have the pharmacy included in the total overall system. Would there then be eventually a national record of these drugs?

Dr. BROWN. It is possible. We just haven't gone that far as yet.

Mr. MICA. Let me ask you this: Would the administrator of a local VA clinic or hospital—the data system in the administrator's office be a part of the regional system?

Dr. BROWN. Would you say that again?

Mr. MICA. Would the data or word processing system in the administrator's office be a part of the regional system? In other words, could VA Washington look at the records and memos that are being generated by the administrator in a local VA hospital?

Dr. BROWN. You know, it isn't necessary to extract that type of information. We don't need that type of information in Washington, so I don't foresee our ever doing that.

Mr. MICA. Well, if they are compatible would it be possible?

Dr. BROWN. Technically it is possible.

Mr. MICA. Let me ask you this: Would the memos of Mr. Walters and his office that are put into the computers on a master file be accessible in the regions through these various systems?

Dr. BROWN. The password wouldn't allow that type of an exchange of information.

Mr. MICA. If you had the password?

Dr. BROWN. That is always possible. Is that true, Jack?

Mr. SHARKEY. Yes, sir, that is one of the advantages of electronic mail that we are moving toward especially in the DVB and DM&S information exchange where instead of sending requests for physicals and results of physicals between the regional offices and the hospitals, it will be done on word processing machines and directly transmitted to either site for action. It can be printed out locally without using the Postal Services. That is the goal that we are striving for with our Vadats system—that we will have all VA facilities interconnected so that electronic mail can move from any facility to any other facility.

Mr. MICA. I am a bit of a computer buff and I totally, totally agree that we have to move in this direction. But what I am hearing here today, I think could be the subject of a another whole hearing.

Let me ask you this: In the master system, is there an automatic backup created every time something is entered into the system?

Mr. COOPER. I think it depends on the system. On the systems reporting in the hospital, you do have a journal log, so every transaction is in a sense journaled. We also have at least two processors in all the class 1 through 4 hospitals, which allows one of the processors to go down. One of the things we will be doing in fiscal year 1985 is for the smaller hospitals which have only one processor we will be adding another processor, so they have some redundancy there. But I feel that our backup system in that sense is—at least state of the art in terms of that particular gear. We have had very, very few problems like that where the system goes down and you can't gracefully get back to where you were.

Mr. MICA. Mr. Chairman, I see my time is up and I will stop at this point. But, again, if I may take the liberty of closing with a comment—I have supported for 5 or 6 years before this committee every effort to get the money on line and to move toward an expedited system to get compatability in computer systems and to get all the assistance that we can get.

I also serve on a couple of other committees where we have been dealing with computer crime and those problems of abuses of information. And I would like to just advise the committee that I think I would request at a future date a hearing about the potential problems of being able to look up a veteran's record any place in the country with minimal password information, security, et cetera, and looking up memos and internal information. I don't know if this committee noted it, but we had a hearing on the Hill—and I broke into the House system, the congressional system, without my password, in about 7 minutes. I am not much of an expert, I am learning from my son. But I am finding out that as we create these systems, we create a potential, a tremendous potential for nationwide abuse if we are not careful. So I will just stop right there. Thank you.

Dr. ROWLAND. Thank you, Mr. Mica, that is certainly interesting, and something that I think this committee should look into.

I will defer to counsel at this time for additional questions.

Mr. MCDONELL. Mr. Cooper, if we read it correctly, I believe in 2 years and 9 months, or 3 years or so, we are going to have 169 hospitals that will be operating on the decentralized system and the MUMPS language, and probably three that will be operating in another language.

What is that other language? I guess you have your contracts. Is it COBOL?

Mr. COOPER. There's multiple languages in the three contracts—say COBOL is the predominant language. There are other languages used in the IHS systems.

Mr. MCDONELL. In your planning for your MIS system, or the network that will result in an Amis how are you going to handle having three hospitals that will be operating under language different from the other 169?

Mr. COOPER. I think as the requirements evolve for the MIS developed for both the district, regional, and central office—the interfaces for the three IHS systems will be more difficult. There is no question of that. I think that technically it is possible. It is just not as easy to make three dissimilar systems communicate with any central data bases as it will be to have the DHCP communicate. We are going to have no problems with DHCP and we will probably have some problems with the IHS, but it is a doable thing.

Mr. McDONELL. May I ask Mr. Davis as the expert from down south, are you aware of any systems right now where they are netting computer systems of two different languages to a common network?

Mr. DAVIS. I am not personally familiar with the kind of systems that you are referring to, but they do exist. I know of them by reputation only, however.

Mr. McDONELL. So what we are saying, then, Mr. Cooper, that it is feasible and it will be something that you are going to have to grasp with at the appropriate time?

Mr. COOPER. Yes, sir; it will be more difficult, but it is doable. The question will be how expensive, how long it will take to do it, and that is dependent upon the configuration of our telecommunications network and how we eventually decide to share data. For instance, if we are exchanging prescription information, where do we keep the repositories, do we keep them in the hospitals and share that way. So there are a lot of technical variables outstanding. However, but I think it is a fair statement to make that it will be more difficult to interface the IHS systems than the DHCP systems because the IHS systems are all different.

Mr. McDONELL. Mr. Sharkey, I read in your testimony that you have assumed responsibility for Vadats, which is the replacement for the old advance records system. Will this new system interface directly with the Decentralized Hospital Computer Program out in the hospitals?

Mr. SHARKEY. Yes, sir, we are working on that. We have a task force working with not only the Department of Medicine and Surgery but also the Department of Memorial Affairs. The patient treatment file will be the first system to be interfaced. I believe we have already started passing test traffic out of the DHCP computers to the patient treatment file located at Austin, TX.

Mr. McDONELL. Can the Vadat system be considered as a possible network for networking the hospitals to provide the information for the MIS that you are looking into, or the DM&S is looking into?

Mr. SHARKEY. Yes, sir.

Mr. McDONELL. Could you just tell me some of the other ADP systems that will be on-line on the Vadat?

Mr. SHARKEY. Basically all of the administrative systems within the Veterans' Administration. Every facility has to send all the payroll and personnel data in; all of the vendor payments go in; time and attendance kinds of things; fee basis runs over the Vadats. There are appoximately 22 administrative systems that use the telecommunications network.

Mr. McDONELL. Is there enough capacity there, or enough capability that that system could interface with DOD's telecommunications network?

Mr. SHARKEY. We are providing for that. Our intent is in this year to begin building a request for proposal. We are augmenting Vadat to handle present operational needs. There are also 28 other

Government agencies that use Vadat right today. We are going to be putting an RFP out on the street in fiscal year 1985 so that vendors can bid on the new system and, hopefully, late in fiscal year 1986 we will install the pilot test system. In fiscal year 1988, the new system should begin to handle all of the requirements of the agency, or most of the requirements. We don't know if TARGET, as an example, can be replaced by Vadats because of its unique requirements. But Vadats certainly will interface into DOD, and we do a lot of sharing with DOD already. They are a current user of Vadats.

Mr. McDonell. What about in meeting your obligations under the Sharing and Emergency Act of providing medical support for combat casualties? In your planning for that emergency situation, have you looked into some sort of an interface between your telecommunications or data network and DOD's?

Mr. Sharkey. Yes, sir. The Agency just assigned a representative to the national communications system primarily for that purpose. The national communications system provides the restoration priorities. This back-up contingency to DOD will be one of the features that we will be building into the RFP. We are working with NCS on a restoration priority for our current system.

Mr. McDonell. What sort of a timeframe would you envision that this would be put in place?

Mr. Sharkey. Fiscal year 1986, sir.

Mr. McDonell. 1986?

Mr. Sharkey. Yes, sir.

Mr. McDonell. You also mentioned a test that was being conducted up at Albany VAMC in regards to its interfacing with the TARGET system. I would like to know, is that test still ongoing? And, also, what are the results?

Miss Starbuck. The test is continuing. The big savings that has come in the test is the saving of time, particularly for the hospital, in determining eligibility of a veteran for admission. It has its advantage in the regional office in receiving early notice of changes in patient's status, and permits the regional office to react much more quickly.

Mr. McDonell. May I ask, are there special terminals for this, or are they using the DHCP terminals?

Miss Starbuck. In the medical center they are using the DHCP terminals. In the regional office we are using a personal computer.

Mr. Sharkey. I might add onto that, that we are doing the same type of information exchange with the Department of Memorial Affairs. Many of the notices of death come to the Department of Memorial Affairs first, and generation approval of funeral services, headstone markers, et cetera, through the using of the Vadat, we will be able to notification into the regional office, to the insurance system so that we can terminate payments and provide faster service to the beneficiaries sometimes take a long time to happen. Is another part of the sharing thing that we are working very hard toward.

Mr. McDonell. Let me ask a question in two parts: Do you anticipate that the configuration that you are using at Albany will be ultimately implemented in the remaining hospitals, and when?

And, No. 2, do you also plan that all field offices of Memorial Affairs will benefit and have that same system?

Miss Starbuck. As I mentioned in my statement, this is an interim system which awaits the final agency plan. Where we have high traffic areas and requests for eligibility, and high turnover in patients, changes in status, and equipment is available between the regional office and the medical center, it is advantageous to be able to have those programs actually put together in a package that is exportable. However, these interim actions are merely expedients which await the integration of the entire plan on the Vadat system.

Mr. McDonnel. Good, thank you.

Miss Starbuck, I am not sure that this question was asked, but if it has just tell me it has, I would like it on the record anyway. We expect to have a compensation increase effective December 1 as well as a pension change as you well know on that same date. With this double increase coming on the same month, do you anticipate that you will be able to make the changes in a proper time to be able to get the checks out on time?

Miss Starbuck. Yes, sir, we expect those checks to go out correctly on January 1.

Mr. McDonell. OK.

I would like to ask one more followup question, if I may, to Dr. Brown, and I am asking your personal opinion on this. Doctor, we discussed at length, and several of the members did, the integrated hospital system, and that test, and the very high cost that this appears to be going into its completion in 10 years.

What would be the impact, and how difficult would it be to discontinue that test and implement DHCP in those three hospitals, and what sort of costs would we be looking at?

Dr. Brown. You mean prior to the test period—the 2 years and 9 months, or after?

Mr. McDonell. Yes, right now.

Dr. Brown. Right now. I have no idea what the cost would be.

Mr. McDonell. Would there be penalties on the contract?

Dr. Brown. Yes; there would be penalties on the contract.

Mr. McDonell. Could you provide that for the record? I would like to have the price on that, if we may. Maybe all three prices that I was asking for.

Dr. Brown. Surely.

[Subsequently, the Veterans' Administration submitted the following information for the record:]

The contracts in question have been extended for the period October 1, 1984, through September 30, 1985. Each contract contains an option to extend beyond September 30, 1985, in one year increments at the prices established by the contracts. This is a unilateral option which is exercised by the Government providing notice of execution to the contractors. If the contracts are not extended beyond September 30, 1985, the costs incurred to that date would be:

A. VAMC Philadelphia, PA, Shared Medical Systems, V101(93)P-1034, $4, 184, 117.

B. VAMC Saginaw, MI. McDonnell Douglas Automation, V101(93)P-1035, $1,989,331.

C. VAMC Big Spring, TX, Electronic Data Systems, $1,450,750.

If the contracts are not extended beyond September 30, 1985, the total costs to the Veterans Administration would be $7,624,198. Although this figure represents the total costs to be incurred under the contracts, the contractors could potentially file suit in court claiming that the VA did not negotiate in good faith and did not intend to let the contracts run through the 10 year life.

If the contracts are terminated prior to September 30, 1985, the contractors would be required to submit a termination claim in accordance with the Termination for Convenience clause of the contracts. It is impossible to theorize what the amount of such claims would be. The general categories of cost the contractors could claim are:

A. All costs incurred in the performance of the work terminated, which shall include initial costs and preparatory expense allocable thereto.

B. The costs of settling and paying claims arising out of termination of work under subcontracts.

C. Profit on costs associated with A above.

D. Cost of settlement, including accounting, legal, clerical and other expenses reasonably necessary for the preparation of settlement claims and supporting data with respect to the terminated portion of the contract and for termination of subcontracts, together with reasonable storage, transportation and other costs incurred in connection with the protection or disposition of property allocable to this contract.

The total sum to be paid to the Contractor shall not exceed the total contract price reduced by the amount of payments made.

In summation, if the contracts are allowed to run through September 30, 1985, and are not extended the costs would be $7,624,198. If the contracts are terminated prior to September 30, 1985, the amount of liability would depend upon the contractor's termination claim. A termination claim cannot be requested unless the contracts have been terminated. Therefore, the costs associated with a termination before September 30, 1985, can only be discussed as categories of costs not actual dollar amounts.

Mr. McDonell. Mr. Chairman, that completes my questioning.

Dr. Rowland. Thank you. I have just one additional question I want to ask Dr. Brown.

Dr. Brown, are you satisfied that there is progress being made in the DHCP relative to the ODM&T's as far as personnell is concerned and other aspects, that everything is going along as you would want it to?

Dr. Brown. Yes, sir, as far as the DHCP is concerned, I am very pleased. There have been no major complications in the installation of the DHCP system. There have been only minor complications which have been ironed out very quickly. For example, if site preparation has not been completed by one place, we simply move the equipment someplace else so it can be installed. Other than that, there have been no complications. I have been very pleased with the support.

Frankly, I am amazed that we have as many up and running as we have. As of August 27, we had 116 hospitals where the Initial CORE equipment has already been installed. Seventy-two of those have an operational system, one or two operational systems. I am pleased with the support we have had, both throughout DM&S and from ODM&T.

Dr. Rowland. Counsel has one additional question.

Mr. Moon. Miss Starbuck, one question. You said that you were just beginning on your effort to have the overnight updating of the master system at Hines. We people who have been interested in delivery of benefits have been concerned a long time about the delays that are caused by twice-a-week contacts with Treasury.

Could you give us your best guess as to when we might have this?

Miss Starbuck. It is going to be kind of a slide figure, Mr. Moon. I guess if we could marshal both the forces in the Department of Veterans Benefits and in the Office of Data Management and Telecommunications, we are probably looking at 18 to 24 months, aren't we, Jack?

Mr. **SHARKEY**. Yes.

Mr. **MOON**. Unfortunately, this is one of the things that we had originally thought we would have with the initial installation of TARGET. That was one of the selling points—that we will provide faster service to veterans, faster delivery of benefits, and that means getting the check out.

So I know you have got a system that is working now, but when a transaction can lay at Hines for 2 or 3 days before it even starts to process, with the technology that is available it seems like we ought to be moving. And I am glad to hear that you are finally getting started.

Miss **STARBUCK**. Yes. This involves a really tremendous effort, Mr. Moon. I agree that when TARGET was first started this was what we wanted—not only will it represent better service to veterans, but certainly will represent a better information feedback to people in the regional office who now have to wait those 2 or 3 days to see whether the transaction that was input actually took and was put in effect. We are going to concentrate on it.

Dr. **ROWLAND**. Miss Starbuck and gentlemen, I thank you very much for being here this morning. I think it is important for us to continue to look at the compatibility of the various systems that we are all bringing together to be sure that they interface properly so that we can get the maximum potential from them. Thank you very much.

This subcommittee stands in recess until 8:30 in the morning.

[Whereupon, at 10:05 a.m., the subcommittee was recessed, to reconvene at 8:30 a.m., Wednesday, September 12, 1984.]

VA PLANS FOR AUTOMATED DATA PROCESSING, OFFICE AUTOMATION, AND TELECOMMUNICATIONS ACTIVITIES

WEDNESDAY, SEPTEMBER 12, 1984

House of Representatives,
Committee on Veterans' Affairs,
Subcommittee on Oversight and Investigations,
Washington, DC.

The subcommittee met, pursuant to notice, at 8:30 a.m., in room 334, Cannon House Office Building, Hon. G.V. (Sonny) Montgomery (chairman of the subcommittee) presiding.

Present: Representatives Montgomery, Penny, Staggers, Rowland, Hillis, Solomon, and Sundquist.

Also present: Representatives Edgar and Mollohan.

OPENING STATEMENT OF CHAIRMAN MONTGOMERY

Mr. Montgomery. The subcommittee will be in order. Mr. Solomon on the Republican side is also here. I appreciate very much his being here.

I do have a rather long statement and I will try to read it.

Our hearing this morning is a continuation of yesterday's subcommittee hearing on the Veterans' Administration's plans and activities in the use of ADP, office automation, and telecommunications, and DOD–VA ADP sharing activities.

This morning we will hear testimony concerning the Trimis plan of the Department of Defense for providing medical ADP support in their hospitals. In just a few minutes I will call on Dr. Mayer and his associate from the Defense Department.

On August 9 of this year, I wrote to Cap Weinberger, the Secretary of Defense, to express my concern for the very large amount of money he plans to spend on the Trimis, and suggested he consider using the VA's MUMPS ADP system as a cost-savings measure. Subsequently, upon completion of a Trimis office-directed comparison study by the Mitre Corp., I received a letter from Deputy Secretary William Taft of the Defense Department which said that, as a result of their review, they were expanding their request for proposal to include consideration of VA/MUMPS software and documentation availability to potential bidders in development of the Trimis system. I understand that the Mitre report did not believe that the VA MUMPS system would successfully meet the significant requirements of the total Trimis.

I am very concerned with the validity of this study and the report. I am aware that several members of the Mitre study were concerned with the Trimis office constraints on the limits and methods of the study. I am also aware of complaints from some of the ADP professionals who were hired as study consultants regarding the narrow area on which they were permitted to comment. I have received comments from GAO auditors who reviewed the study and were critical of the study methods.

I think it is important to note that current OMB and GAO documents encourage the use of Government-owned or off-the-shelf computer systems to avoid high development costs. It is also interesting to note that DOD directive 7920.1 makes this same recommendation.

The final concern that I have with this Trimis decision is the fact that the Army, Navy, and Air Force Surgeons General were not even asked their opinion on my suggestion to try the VA MUMPS system. This is very troublesome for me, as I have received copies of letters from the services which indicate they would like to use the VA system.

Additionally, a DOD/VA memorandum of agreement, entitled "Coordinated Development of Compatible Automated Support Systems in Health Care," dated April 5, 1978, suggests the very kind of sharing that I recommended in my letter to Cap Weinberger and which is prescribed in DOD/VA sharing legislation.

Frankly, I can't imagine the two main agencies—and this is really my main point—who will be responsible for providing medical treatment for combat casualties not being able to communicate between their two medical ADP systems.

It appears to me that DOD is going to continue down the same path they have been following for the last 5 years, a path which has expended millions of dollars, and not provided the military hospitals with adequate ADP support. I personally think it is time for DOD to provide each service with a VA MUMPS computer system for installation in one of their hospitals as quickly as possible by leasing, buying or borrowing the hardware. I think DOD, in cooperation with the VA, should form a task force to assist in the installation of the evaluation systems and to develop a common dictionary and other software tools needed for data base administration, maintenance, and conversion tasks.

Specific participation by DOD technical personnel working on field medicine automated support for combat casualties should also be included.

I would now like to call on Gerry Solomon for any comments that he might like to make. I am sorry that the gentleman from Indiana, the ranking minority member, Bud Hillis, is not here this morning, but thank you, Mr. Solomon, for being here.

Mr. SOLOMON. Thank you, Mr. Chairman. I am just going to concur in your remarks and save my own. I am a member of the Foreign Affairs Committee and I certainly trust your judgment as a member of the Armed Services Committee.

I do have a statement from Bud Hillis, who is delayed en route. But I would like to submit his statement for the record, if I could.

Mr. MONTGOMERY. Without objection, the statement will be submitted.[1]

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[1] See p. 35.

We do have two panels this morning and those statements will be made part of the hearing record.

This morning I would like to welcome Dr. William Mayer, Assistant Secretary of Defense for Health Affairs, and Dr. Michael Mestrovich, Acting Director of the Trimis Program. I have met with both of these gentlemen and appreciate them coming by. We have been talking through the problems that are developing on these computer systems.

Dr. Mayer, it is nice to have you before the committee. You may proceed.

STATEMENT OF HON. WILLIAM MAYER, M.D., ASSISTANT SECRETARY OF DEFENSE (HEALTH AFFAIRS), ACCOMPANIED BY MICHAEL MESTROVICH, SPECIAL ASSISTANT FOR INFORMATION SYSTEMS PLANNING AND INTEGRATION, AND ACTING DIRECTOR, TRIMIS PROGRAM OFFICE

Dr. **Mayer**. Thank you, Mr. Chairman, Mr. Solomon. I want to thank you particularly for this opportunity to discuss the tri-service medical information system [Trimis] and describe how that effort interacts with the Veterans' Administration. With me, as you noted, Mr. Chairman, is Dr. Michael Mestrovich, who is my special assistant for information systems planning and integration, and the Acting Director of the Trimis Program Office.

We are well aware of the leadership role this committee has played with respect to the development of automated medical information systems in the Veterans' Administration, and I very much welcome your interest in our own efforts. In my remarks today I will first of all review the current shared services relationships between our two agencies, second, I will apprise the committee of my intended direction for Department of Defense medical information systems; and, third, I will discuss the potential relationships between the Department of Defense and the Veterans' Administration during our system development process.

Health resources sharing activities between the VA and the DOD are extensive. We currently have 70 agreements between military hospitals and VA medical centers in 50 different geographic locations. The range of shared activities covers the entire spectrum of clinical, ancillary, and administration services. In addition, agreements in education, research, and procurement have been exceptionally effective and cost effective for both agencies.

I would like to outline some specific examples very briefly of sharing activites in the management information systems area.

The VA provides DOD quarterly data on survivors and semiannual data on all VA beneficiaries. This information is used to update the defense enrollment eligibility reporting system, called DEERS, data base for eligible DOD beneficiaries. This exchange of data has resulted in over 250,000 additional eligible beneficiaries being added to the base.

A joint test of an automated wartime patient regulating system—which is to say, of course, a movement, an evacuation system—will result in a common communication network and common communication protocols for patient movement between DOD facilities and VA facilities, regardless of how our system ultimately turns out in detail. The first phase of this project will begin in October of this year at the VA medical center here in Washington.

An exchange of clinical documents and software has reduced time and effort for both VA and Trimis in preparing information system procurements. Included in this sharing were Trimis functional requirements for laboratory, radiology, pharmacy, and for patient administration systems, and VA file manager, screen handler, and core module software.

Trimis and the Air Force are scheduling a test of the VA patient appointment and scheduling software at March Air Force Base in Loma Linda, CA at the Loma Linda VA. California is a good location for us to determine the applicability of this system sharing in a military hospital environment.

Finally, the VA hospital in Baltimore is sharing the use of the Trimis computer-assisted practice of cardiology, which is a system located at Walter Reed Army Medical Center. Additional sharing of this valuable diagnostic system with other VA hospitals is anticipated.

I would like to note that the scope of our sharing activities would not have been possible without this committee's foresight and assistance in the passage of the VA/DOD Health Resources Sharing and Emergency Operations Act of 1982.

Since coming to the Department of Defense nearly 1 year ago, I have taken a keen personal interest in our medical information systems, and I readily admit that I was not totally pleased with what I found. We have had problems in both systems development and administration, trying particularly to make compatible the different requirements that the services came up with, and I have taken a number of steps to identify and correct these problems.

I directed a thorough review of the current Trimis acquisition strategy by members of my own staff, working in coordination with staff from the Veterans' Administration, and the General Accounting Office, and I have suspended all procurement activities for a composite medical information system until this review is complete. Clearly, lessons learned by the VA over the past few years will be invaluable in developing our own strategy.

Put simply, my objective is to offer our hospital commanders automated systems which can be operational in the near future and which will be practically useful to them. In addition, these systems must be cost effective, have a reasonable life expectancy, and must be compatible with other DOD systems. Our medical information systems relate very closely to our personnel data system, our finance and accounting data systems, and our logistical data systems, and they must be compatible with those. This last criterion can be particularly difficult, but it is critical if these systems are to support our primary misson, which is medical readiness.

The VA's use of the MUMPS software in developing hospital information systems has laid very valuable groundwork for our own efforts. Its application to our systems is a major part of the review I just mentioned. While it is too soon to determine the extent to which MUMPS can and should be utilized, preliminary indications are that certain elements of MUMPS may have direct application to our needs, and in those instances where they do, I will take advantage of these. For example, the preliminary design for our new medical quality-assurance software system utilizes the MUMPS file manager.

Once again, Mr. Chairman, we welcome your interest and continued support and want to reaffirm our dedication to the principles of the sharing act, which is going so well, in all areas of health-care resources, including, emphatically, information systems.

Dr. Mestrovich and I will be very happy to answer any questions that you have, sir.

[The statement of Dr. Mayer appears at p. 71.]

Mr. MONTGOMERY. Thank you, Dr. Mayer. We will have some questions.

The ranking minority member on the subcommittee, Mr. Hillis of Indiana, the Chair would like to recognize him. I appreciate he and the other members on the Republican side, as well as the Democratic side, for being here and being pretty well on time.

Mr. Hillis.

Mr. HILLIS. Thank you, Mr. Chairman.

I first of all would like to apologize for arriving a couple of minutes late this morning. I got tied up in my office. But I do want to submit for the record an opening statement.

Mr. MONTGOMERY. Without objection, that statement will be put in the record.

[The statement of Mr. Hillis follows:]

OPENING STATEMENT OF ELWOOD HILLIS, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF INDIANA

Thank you, Mr. Chairman. You and I are involved in a dual undertaking with respect to this hearing because we both serve on the House Veterans' Affairs Committee as well as the House Armed Services Committee. In these capacities we have common goals. We want both the VA and the Department of Defense to have excellent automation capabilities in their medical programs. We know that this is required. But we also want this excellence to be arrived at by VA and DOD sharing information on this state of the art. We want economies whenever they can be properly achieved without sacrificing quality.

Mr. Chairman, for many years, VA studies the possibility of a gigantic, expensive idea of centralized computer program networking across the Nation. The study itself was very costly and seemed to always be inconclusive. Ultimate cost estimates were very high and imprecise. This committee, under your leadership and that of Mr. Hammerschmidt, urged the VA to consider something else. To the great credit of Administrator Harry Walters, VA did just that. The result is that today it is embarked on a relatively inexpensive, yet quality conscious, decentralized program that works and works well.

Mr. Chairman, DOD has had an experience somewhat akin to that of VA. Trimis has been a long-term DOD idea which already has cost millions of dollars with little to show for it. We have reason to suggest that there is a better way and that perhaps DOD ought to be more flexible in its approach. It ought to consider most carefully what VA is doing and determine if it ought to change its course and borrow some of VA's ideas and share some of VA's experiences at least on a good test basis.

Mr. Chairman, we all know that DOD must have a medical military readiness second to none. We also know that VA is the principal backup to DOD if the need arises. We further know that a giant centralized system might fail if its communicaitons system failed but that individual military hospitals would still require automation for day-to-day treatment of patients. Under these conditions, I note that our principal witness this morning, Dr. William Mayer, the Assistant Secretary of Defense for Health Affairs, has stated that he will carefully consider and review alternatives for DOD; that he will expand Trimis studies to include a more comprehensive consideration of the VA system; that he believes in sharing; and that he shares this committee's concern for cost-effectiveness, together with complete medical military readiness.

Mr. Chairman, I congratulate you for scheduling this hearing. It is an important issue that is before us and all of us need all the information we can obtain in order to make the best decisions possible.

Thank you, Mr. Chairman.

Mr. MONTGOMERY. Mr. Sundquist.

Mr. SUNDQUIST. I have a statement for the record, too, that I would ask be entered in the record.

Mr. MONTGOMERY. It will be submitted.

[The statement of Mr. Sundquist follows:]

OPENING STATEMENT OF HON. DONALD SUNDQUIST, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF TENNESSEE

Thank you, Mr. Chairman. I congratulate you for scheduling this hearing. It may well give impetus to improving our Department of Defense hospital capabilities at greatly reduced cost.

Mr. Chairman, both VA hospitals and military hospitals need up-to-date state-of-the-art automation if they are to practice quality medicine.

VA once had a grandiose centralized idea in this area that may well have had considerable merit. But its cost projections were extremely high and the idea never really got off the ground. As a result, VA fell way behind in the use of computers in its medical program. It has now gone in a decentralized much less expensive direction with a program which we are told is working well and enthusiastically accepted by its medical personnel.

Mr. Chairman, I am aware that the Department of Defense medicine is somewhat different than VA medicine. However, I suggest that there are many similar functions, and I would hope that DOD would consider sharing some of VA's computer systems.

In a similar vein, I would hope VA would share more and more in and profit from DOD automated medical successes and capabilities. The end result can only be good for all of us.

Mr. Chairman, Dr. Mayer comes to us with impressive credentials, and I am anxious to hear his testimony.

Thank you, Mr. Chairman.

Mr. MONTGOMERY. Bob Edgar, who is the chairman of the Subcommittee on Hospitals and Health Care, is involved in some of the areas we are discussing today on computers.

Mr. EDGAR. Mr. Chairman, I apologize for being late. Without objection, I would ask to include a closing statement for the record. [Laughter.]

No, I'm teasing. It's an opening statement.

[The statement of Mr. Edgar follows:]

OPENING STATEMENT OF HON. BOB EDGAR, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF PENNSYLVANIA

Thank you, Mr. Chairman. I am concerned that the Veterans' Administration will receive adequate funds and staff with which to accomplish the successful completion of the decentralised hospital computer program.

As you know, the Subcommittee on Hospitals and Health Care visited all six of the VA's medical regions last year. During our visits to these six regions, it was clearly demonstrated to us that this system will make a great contribution to the delivery of quality health care to our Nation's veterans.

The Veterans' Administration and Department of Defense Health Resources Sharing and Emergency Operations Act, Public Law 97-174, makes the VA the primary backup to the Department of Defense for the provision of health care during periods of war or national emergency. It also requires the VA/DOD Health-Care Resources Sharing Committee to look at opportunities for greater sharing of the health-care resources of VA and DOD, which would be beneficial to both veterans and members of the armed forces and could result in reduced costs to the government by minimizing duplication and underuse of health-care resources.

I am also concerned that the VA's ADP health care system is totally compatible with the DOD's so that in time of war or national emergency, when confusion is high, we will have a stable, reliable computer system to assist both VA and DOD in treatment of battle casualties.

It appears to me that consideration of the use of the VA's Decentralized Hospital Computer Program by the Department of Defense for their tri-service medical information system is what the Congress intended with the enactment of Public Law 97-174.

With deficits of over $200 billion and the major portion of our Nation's budget (or almost 30 cents out of every taxpayer's dollar) going to the Department of Defense, it seems to me that DOD should look at every opportunity to utilize existing resources. I strongly urge that the Department of Defense take a closer look at the VA's fine decentralized hospital computer system, and consider testing the system in one hospital of each of the three armed services.

Mr. EDGAR. Mr. Chairman, I do have some questions that I would like to ask. I apologize to our witnesses for being late, but I did hear, I think, the core of your statement.

Mr. MONTGOMERY. Why don't we come back and recognize members in order, if you don't mind. The Chair will then recognize you for questions. I was just giving you a chance for opening statements, unless you have a question that can't wait.

Mr. EDGAR. No; I can wait.

Mr. MONTGOMERY. Mr. Mollohan.

Mr. MOLLOHAN. No thank you, Mr. Chairman.

Mr. MONTGOMERY. The Chair will ask a couple of questions.

Dr. Mayer, it still seems to me that you are just on the fringes of using the MUMPS program. You said you are looking at it.

I had a man come to me the other day who is a retired military person. I know his family. He said, "I want to tell you what a good job the veterans hospital is doing here," the one near Walter Reed. He said, "I go to Walter Reed for cancer treatment. They are overbooked. They had to send me to the veterans hospital here in Washington, DC. I knew you were Chairman of the House Veterans' Affairs Committee—" in fact, he even wrote me a letter saying that he was sent from Walter Reed to the veterans hospital, and they certainly took good care of him.

Well, it just doesn't make sense if we can't tie these computer systems together. The staff tells me—and I believe Dr. Schafer, our next witness, will say—that unless you come up closely to what the MUMPS system is, you are not going to be able to tie in the veterans hospital computers with the military computers. That is the main problem that I'm having, plus what we have been told this Trimis is going to cost the taxpayers of this country.

Dr. MAYER. Sir, I believe it is important to understand that no information system presently available, either within the Veterans' Administration or in our own system, is a complete medical record. We haven't gotten to automated medical record stages at this point.

Now, it is true that it would be very handy to be able to instantly communicate everything we know about that patient from Walter Reed to the veterans medical center. On the other hand, the fact that we don't have today an integrated automated medical record system, or complete medical information system, in no way seriously impedes the transfer of information about that patient by other communications means.

As we develop our information systems, we not only have to consider the fact that we do interchange patients with the Veterans' Administration—of course, under the sharing agreement, we are doing more and more of this; we are giving services to one another in the various hospitals. But it isn't imperative at this point that we rush into a system that we can't be sure will be integrated with our own personnel data system, which is much more extensive, our own finance and accounting system and our own logistical systems, all of which have established data processing systems, none of which is a MUMPS system.

This is not to say we can't use MUMPS. In fact, we do already. We are using it for patient information in the family practice clinic in Monterey, for example, and it has been very successful. We are using it, as I mentioned, as the basis for our medical quality assurance program. So I believe the day may come when there will be enough compatibility between the two systems that it will be very useful to us.

The Veterans' Administration hospital system is an important part of our backup, particularly in contingency situations, and we hope that it will be possible ultimately to have the use of their services and up to 30,000 beds in the Veterans' Administration.

At present we also have contracted for over 63,000 other beds in the military-civilian contingency hospital system. Of course, some of those hospitals have computer systems, some of them don't. We are always going to have a communications problem in transferring patients. But the development of that communication system is at least as important as the development of the internal system. So we are going to use MUMPS to the maximum capability that we can, where it proves to be feasible to help our delivery of care, to help our interchanges with the Veterans' Administration. But our studies so far have indicated that there is no reason at this point to mandate the lock, stock, and barrel takeover of the Veterans' Administration system in the Defense Department system because we have somewhat different needs, many different kinds of locations, many different kinds of patients. We have different systems for training personnel. We have a much more rapid turnover of personnel from place to place as military assignments change, which makes us quite different from the Veterans' Administration. And our patients tend to be shorter term patients.

So all of these are considerations that have entered into our evaluation of how much of MUMPS we can use because we want to use it to the maximum amount possible, where it will facilitate the rapid development of a systemwide information processing procedure that will help our doctors treat our patients, which is what it's all for really in the final analysis.

Mr. MONTGOMERY. My time is up.

Mr. Sundquist.

Mr. SUNDQUIST. No questions.

Mr. MONTGOMERY. Mr. Hillis.

Mr. HILLIS. Just a couple of questions.

Dr. Mayer, how long has Trimis been in use, and how much has it cost the taxpayers?

Dr. MAYER. Mr. Hillis, Trimis has been in operation for about 11 years. During that time, it has developed a number of systems which are in place—not a comprehensive system—but, for example, a magnificent system, for the computer-assisted practice of cardiology which we have placed in many hospitals throughout our system. We also have developed some pharmacy packages which we have shared with the VA, by the way, and a radiology package. We are beginning to share and test the VA's patient appointment and scheduling process.

The numerous parts of this system which have to ultimately be integrated into some kind of a comprehensive whole have so far cost, as far as I can estimate, in excess of $200 million. Much of that has been development costs and hardware procurement.

Mr. HILLIS. I take it from what you're saying that the system itself isn't fully instituted as yet.

Dr. MAYER. That's correct.

Mr. HILLIS. In other words, there will be additional costs?

Dr. MAYER. Absolutely.

Mr. HILLIS. Do you have any idea what the total system will cost when it is in place?

Dr. MAYER. Our consultants and our staff working together, and trying to be as realistic as possible, with the Government's history of cost overruns indicates that it will probably cost us—by the time we finish developing a comprehensive system in all military hospitals, ships at sea, field hospitals overseas, over 1,000 clinics and hospitals that we have spread around the world—that it could cost us approximately $700 million.

Now, of this total amount, it appears that the cost of systems development, what we could save if we used MUMPS as it now exists, amounts to approximately 2 to 3 percent of that total cost as a maximum, perhaps less. So there would be a substantial, several million dollars, savings, even though some of the savings would be offset by the fact that we would have to make some modifications even if we take the system as it now exists. So we think that in a $700 million expenditure, if we plunge ahead and take the fullest possible advantage of MUMPS, that we can save perhaps $5, $6, maybe $7 million of that $700 million, approximately 1-percent savings. So it is important that we do that. That is not an insubstantial amount of money.

But, on the other hand, it is not enough of a savings to mandate that we simply take the system as it exists because it doesn't at this point coordinate with our personnel systems and our finance and accounting and our logistical systems. It can be modified to do that.

Mr. HILLIS. Thank you very much.

Mr. MONTGOMERY. Mr. Edgar.

Mr. EDGAR. Thank you, Mr. Chairman.

I have a series of questions that I would like to ask in relationship to the Hospital Subcommittee which I chair. Before I get into those more formal questions, let me just ask you some general questions about what you have been saying so that we can be clear.

You're talking about a $700 million computer system—is that correct?

Dr. MAYER. Probably, yes, sir.

Mr. EDGAR. Which would be how extensive? Would it be all military health installations that would be plugged in?

Dr. MAYER. Ultimately that's our goal, yes, sir.

Mr. EDGAR. It would all be plugged in to a centralized computer system?

Dr. **Mayer**. No, sir. It would be a system in place that all those facilities could use. But I want to make it very clear that we don't conceive of one massive mainframe computer into which everybody is plugged, for a variety of, I think, obvious reasons.

Mr. **Edgar**. Has the plan come off of the design table as of yet for the whole $700 million?

Dr. **Mayer**. No, sir. Certain aspects of the plan are certainly roughed out and we have an idea of how to proceed. As far as any final planning, that is going to rest very heavily on the systems development that proceed from now forward.

Mr. **Edgar**. How long do you think, once the system is in place, with all of its design features, how long will it be current and modern without need for maintenance and upgrading?

Dr. **Mayer**. That's a really good question, and that is one of the reasons we want to look very carefully at what kind of an investment we make in hardware and in systems technology at the present state of the art, because if we're going to spend that kind of money, and it's going to take 4 or 5 or 6 years before a system is totally operational, to find out at that point that the technology has passed us by and that our equipment is becoming obsolete would be a very dangerous and inappropriate use of public moneys it seems to me. So that is one of the reasons I don't want to plunge into just any system, even though since arriving in Defense and examining the extent of our information systems, I have become very impatient. I want something out there that will help doctors treat patients, and I want it within a reasonable time.

My systems analysts and computer experts tell me: "Well, Doctor, it's going to take a year to do this and another year to do that." Frankly, I'm not sure we can wait that long. It will take a couple of years before the major medical installations begin to have what approaches a comprehensive system, or at least the core of such a system, that they can then elaborate on and build on in very much the same way that the decentralized program in the VA has progressed.

I agree with the GAO—we have talked about it—that's a good way to proceed. I don't want a gold-plated, perfect system put in place automatically at some remote time in the late 1980's. I want to start something that can give the people who are delivering the service an instrument they can use, and it has got to be useful. I don't want an information system just for the sake of having an information system. I want something that helps the doctor help the patient.

Mr. **Edgar**. And you want it to be compatible with the VA system?

Dr. **Mayer**. Absolutely. It has got to be able to communicate with the VA system, which doesn't mean that it has to be identical. It does mean that we have to have the black boxes to be able to transmit information.

One of the important reasons is that the medical regulating office at Scott Air Force Base which controls patient movement, if we were to have a mobilization or some hostilities in Europe, those patients have to be reported to the medical regulating office. They determine what hospital is available, with what beds, where, closest to that soldier's, sailor's, or marine's home, so that they can be distributed both in the most effective way as far as using our medical resource, and also for the benefit of the patient and his family.

Obviously, the medical regulating system has already developed a computer system for doing this. It is not complete. But if we are going to be using a substantial number of beds, which we would have to do in, God forbid, a major mobilization, that regulating office is going to have to be able to communicate with the VA and know where the beds are, what ones are available, so we can send the patients there.

Mr. EDGAR. How detailed is the request for proposal relating to the coordination between the VA and the Department of Defense computers in terms of common data elements and common resources that could be used on the computer?

Dr. MAYER. Since I didn't write and haven't read in detail the current draft of the RFP, perhaps I could ask Dr. Mestrovich to respond to that.

Dr. MESTROVICH. The RFP itself is being redone, to be presented later in October for review, and then hopefully, by the first of the year, it will be on the street.

We are aware of the requirement to stress the commonality among systems, to establish a common data dictionary, and that is a requirement we will put into the RFP. It is not written yet.

Mr. EDGAR. How closely have you worked with the VA staff in developing that RFP?

Dr. MESTROVICH. How close have I worked, or the Trimis Program Office?

Mr. EDGAR. The program office.

Dr. MESTROVICH. As far as developing with the staff, I would have to say, in my short tenure, I am not aware of any close day-today working relationship. We have obviously been together with the VA on several projects revolving around data exchanges, communications, those types of things, but in developing the RFP, I am not aware of any effort that's going on.

Mr. EDGAR. Don't you think it would make sense, that if you're going to have this marriage between systems, if not in terms of commonality of software, at least commonality of data base and language, that very close consideration, as the RFP is being developed, should take place with the VA?

Dr. MESTROVICH. That makes perfect sense. I think our concern is primarily the fact that data elements, uniformity of standards, communication protocols, the ability to link between one system and the other, those are the important aspects and those are things, as Dr. Mayer mentioned earlier, that we are working on, including a test of a common CALM communication system between the VA and the DOD through the Armed Services Medical Regulating Office system this fall.

Mr. EDGAR. Mr. Chairman, could I have about 5 minutes of additional time?

Mr. MONTGOMERY. I'll come back to you. Let me get these other members and then we'll come right back to you.

Mr. Mollohan.

Mr. MOLLOHAN. I have no questions, Mr. Chairman.

Mr. MONTGOMERY. Mr. Staggers.

Mr. STAGGERS. No questions.

Mr. **Montgomery**. Let me ask a question before I go back to Mr. Edgar.

I made a pretty strong statement here that some people didn't agree that the Mitre report was really that successful, that the GAO didn't much like it, and that the Surgeons General were really, in effect, not given an opportunity to express their thoughts on these computers.

What is your answer to that, Dr. Mayer?

Dr. **Mayer**. I have talked, in a general way, with all three of the Surgeons General about the need, which we all agree upon emphatically, for moving ahead and getting a system that we can all use. Never has any one of the three—Max Bralliar of the Air Force, or Bernie Mittemeyer of the Army, or Lou Seaton from the Navy—never has one of them said to me that they had any particular desire for us to plunge ahead and take the MUMPS system, or the VA system, rather, MUMPS being just a language.

We have agreed that we're impatient for further progress. I am under the impression very clearly, from my communications with the three Surgeons General, that they are very supportive of my efforts to make the system rational, to make sure that all possibilities are considered, and that we move ahead with it.

Now, there are people in the individual services—not the Surgeons General themselves—there are people in the individual services who have advocated giving up on any attempt to make an integrated, composite health care system, and would rather we just take the money and divvy it up among the services and let them give it to their hospitals and tell them all to develop a system. The whole purpose of setting up Trimis many years ago, and the strong concern on the part of this committee and others in the Congress, has been that we don't go off in multiple directions.

Mr. **Montgomery**. Dr. Mayer, I believe Dr. Mestrovich told our staff that the Surgeons General were not consulted and allowed to give their opinions on this particular issue.

Dr. **Mayer**. The Surgeons General and I have discussed the whole issue, not specifically the Mitre study. We have never invited them in as individuals to discussions of the development of the system.

Mr. **Montgomery**. Staff tells me that the Surgeons General were not given the opportunity to review and make comments on the letter that I had written you pertaining to this matter.

Dr. **Mayer**. I didn't formally distribute your letter to the Surgeons General, but very shortly after it came to the Secretary—and I met you in the hall and had a brief exchange with you—I shared that with all three of the Surgeons General personally, just as further evidence of the fact that it was time we called a halt to further procurement in Trimis until we could all be sure that the thing was going to be useful to all of us.

So, as far as a formal referral, Mr. Chairman, of your letter, no, that didn't take place. Because my interactions with the Surgeons General by and large are informal and very frequent, and I try to share with them everything——

Mr. **Montgomery**. In other words, what you're telling the subcommittee, is that you informally dealt with the Surgeons General. It was nothing formal where they made recommendations.

Dr. **Mayer** [continuing]. That's correct, sir.

They did have input, however, to our composite health care system requirements, and have all along. Their staffs have worked with my staff. Again, the three doctors who run the military health systems in the three services are generally not personally involved in the discussions of such details as the requirements for the system, although they are certainly——

Mr. **Montgomery**. You said earlier that a part of running the hospitals is having good computers, and a hospital's bottom line is to have good patient care, which computers would help.

Well, it is just a point. What we are hearing now should have been brought more into the situation.

Mr. Edgar.

Mr. **Edgar**. Thank you, Mr. Chairman.

I understand that currently the HIS, the commercial hospital information system, is being implemented at the Jacksonville Naval Air Station and also at the Fort Bliss Army Base. I understand that these systems have encountered some serious problems and are not yet fully operational, and that, in addition, the services are currently operating stand-alone medical ADP modules at various Department of Defense hospitals. A.D. Little, a consulting firm, has been awarded, I believe, a contract for some $3.4 million to evaluate the performance and cost effectiveness of these systems. As I understand it, it is expected that these evaluations will take some time.

During the May 1, 1984, testimony before the House Subcommittee on Department of Defense appropriations, you stated that the Department of Defense would not proceed with the consolidated hospital computer system procurement until the HIS systems are adequately evaluated. Therefore, I have three specific questions.

What is the estimated date for release of the consolidated hospital computer system RFP, and what is the estimated date for the contract award, and do you feel that adequate evaluation of the three HIS systems could be performed before the release of the RFP?

Dr. **Mayer**. Dr. Mestrovich can add to what I am going to say.

We have had some problems in the applicability of those commercial, off-the-shelf HIS systems in the military hospitals, partly because military hospitals are run quite differently in many instances from civilian hospitals, for which the systems were designed, partly because we have a far greater need to accommodate a very large outpatient business which the average civilian hospital does not have. But we are already learning from these difficulties during the process of testing those programs in those test hospitals. There are actually three sites. By late this fall we will have learned a great deal about the applicability of those systems to our own. We are already finding some problems which obviously are going to result in major systems development and systems modification costs if we were to take those programs as they are and attempt to use them.

We don't think that the final cost-benefit analysis in great detail will be available until next spring. Hopefully, I would like an RFP on the street early in the next calendar year for a composite system. Hopefully, that system will be bid by people who have taken into account in the competitive marketplace whether such systems packages, which some bidders may already have in hand, or others that are available, or the VA system, will be the most efficient and most effective for installation in DOD. Even though we won't have the final cost-effectiveness analysis of those three systems, we can still proceed to put the RFP on the street in perhaps January and be comfortable that something isn't going to develop in the final cost analysis that is going to shoot down the whole process that is set into motion with the release of the RFP.

Mr. **Edgar**. Could you describe for us in just a little bit more detail how much effort you have made to take a look at the VA system? The Mitre study begrudgingly acknowledges that the VA's laboratory and pharmaceutical models show an even higher match with the kind of functions that you were looking at, and there is some evidence that out at March Air Force Base there has been some work in looking at the VA system.

How closely have you analyzed the software package and centralized approach that the VA is using for the purposes of use of a similar system in the Department of Defense?

Dr. **Mayer**. Well, I will answer in a general way and then ask Dr. Mestrovich to elaborate.

I took the occasion, when I first found out about the fact that MUMPS was not being considered and the VA system was not being very seriously considered in the proposed composite health care system at that time, I went to the VA hospitals in Long Beach and in San Diego, after making arrangements with the Chief Medical Director of the VA, and spent a number of hours in each place talking to people who were using the system, talking to the people who had designed and were operating the system, examining their hardware installations and getting a very full briefing on how useful they felt it was and how possibly applicable it would be to our own system.

When I became aware that Members of Congress, the General Accounting Office, the Inspector General, were all interested in Trimis and how it was operating, after I had had a number of informal talks with the Surgeons General, it became clear to me that we would have to get some outside opinion of high quality as to whether or not the system would be applicable to ours.

So I convened a panel of people from throughout the Defense Department, and with representation, I believe, from OMB and the General Accounting Office, to look at the situaton and also to look at the Mitre study. Of course, I asked Mitre to do a study for us because they are already contractors of ours, and they were not potential bidders on our composite system.

We also employed a major accounting and analysis firm, Deloitte, Haskins & Sells, who had considerable previous experience with the VA system and knowledge of it, to participate. All of this I tried to bring together to get a realistic appraisal of how much of the VA system we could use, how much it would save us to use it and whether or not it was possible to use it and still remain compatible with these other major automated information systems that DOD uses that we are totally dependent on, like the personnel system and the finance system and the logistics system.

Mr. **Edgar**. Mr. Chairman, I just have two additional questions, if I could proceed.

Mr. **Montgomery**. Go ahead.

Mr. **Edgar**. Let me read a paragraph from a memo from Dr. Barnett, who helped to develop the MUMPS system, and this is dated July 19, 1984. I would just like your reaction.

The statement:

> The Mitre task to examine utilization of the Veterans' Administration software in the Trimis program is too limited a definition in order to address the most important issues. The fundamental challenge is the definition of the strengths and weaknesses of the alternative strategies of the Trimis approach and the VA approach. Any recommendation must be based on a critical analysis of these two different approaches to the development and implementations of a multihospital information system. It is illogical to begin with the premise that the present Trimis strategy has a guaranteed potential to be as successful. A comprehensive analysis must include the assessment of the probability of success and the likely cost of the Trimis strategy, as well as considerations of whether the VA approach might be less expensive and better able to implement in a shorter time frame.

It goes on to a number of other detailed comments.

How do you react to that?

Dr. **Mayer**. Frankly, it is difficult to react specifically to that long and complex statement. It sounded sensible to me.

Mr. **Edgar**. Let me just ask a closing question then.

My impression after 10 years is that the Defense Department is pretty sophisticated. It can work very well with B-1 bombers, MX missiles, and M-1 tanks, and design all kinds of sophisticated hardware. My impression is that it does have a mission that sometimes is not evaluated in terms of cost as much as in terms of technology, and as I look at some of the contracts that are let in my little congressional district, some of them are very complex and detailed.

In this case, I think all of us are interested in both a Department of Defense and VA computer system that will give adequate information and useful resources for patient care and for coordination services. I think there is a philosophical concern that I have, that I am not sure how to ask the question, but let me see if I can try.

Computer systems can either be technologically advanced and sophisticated so that you have to call in an IBM specialist to run the system, or they can be designed technologically to be user-friendly, so that the clerk typist on the ward can gain access to that segment of information that is necessary for patient care and that it doesn't take 2 years to reprogram the computer to do some task.

How much user-friendly concern, user accessibility, is being planned into the RFP?

Dr. **Mayer**. Actually, exactly how it is going to be stated in the RFP I can't tell you, but that is one of our two or three absolutely primary considerations. The realities are that military personnel often serve for relatively short periods of only a couple of years in any given location.

We don't expect to have our ceilings raised to allow for the acquisition of a large number of computer experts. Whatever system we have has got to be useable without a huge amount of training, by essentially a young, transient, military population. So this is of extreme concern to me. I don't want elaborate, esoteric languages that nobody can understand. Physicians themselves, in spite of all their education, training, and abilities are frequently very resistant to computer systems until they are actually shown to them.

The VA hospital in San Diego, for example, in order to overcome this, went down to Toys-R-Us or some comparable scientific establishment and bought some Commodore or VIC home computers, put them in their library, and let people check them out as if they were books. They managed to so seduce the medical staff into the beauties and potentialities of this system that they helped break through a lot of the initial resistance.

Now, that is a constant concern to us. After all, the military services are a continuous training endeavor. We don't have that many college graduates. We can't rely on a system that is going to be so complicated that the people can't get into it, because that will turn then off. They simply won't use it.

Mr. EDGAR. It sounds like we're going after Radio Shack color computers or Apple III, IV's, and whatever.

Thank you very much.

Dr. MAYER. Thank you, Mr. Edgar.

Mr. MONTGOMERY. Thank you.

Mr. Penny.

Mr. PENNY. No questions.

Mr. MONTGOMERY. Thank you, and thank you, Dr. Mestrovich.

Dr. MAYER. Thank you very much, Mr. Chairman.

Mr. MONTGOMERY. We have one more panel, and we would like them to come forward at this time. It is comprised of persons that we're familiar with in the VA decentralized ADP system on the use of MUMPS software. We have invited them today to testify and to share with us their experience and thoughts on the VA system, as well as any thoughts they might have on the Trimis. We appreciate these gentlemen being here.

Dr. Paul Schafer, executive director, National Association of VA Physicians, Mr. Richard Davis, Director of Information System Office, VA Medical Center in Lexington, KY, and Mr. David Marcus, who is from the Micronetics Design Corp., a private corporation in Rockville, MD.

For Dr. Mayer and his colleague, we may have other questions that we would like to submit to them. I would like the record to show that I wish Dr. Mayer or someone from his office would have at least stayed to hear this other panel. That's a problem. These witnesses jump up and leave and really don't know what the other panels say.

Is there anybody here from the Defense Department representing Dr. Mayer?

VOICE. Yes, sir, I am from Dr. Mayer's office.

Mr. MONTGOMERY. OK. You pass on to him what is being discussed.

Go ahead, Dr. Schafer.

STATEMENTS OF PAUL W. SCHAFER, M.D., EXECUTIVE DIRECTOR, NATIONAL ASSOCIATION OF VA PHYSICIANS, ACCOMPANIED BY RICHARD DAVIS, DIRECTOR OF INFORMATION SYSTEM OFFICE, VA MEDICAL CENTER, LEXINGTON, KY; AND DAVID J. MARCUS, VICE PRESIDENT, MICRONETICS DESIGN CORP., ROCKVILLE, MD

STATEMENT OF PAUL W. SCHAFER

Dr. SCHAFER. Thank you, Mr. Chairman.

As you know, I appear here in a strictly unofficial capacity with respect to the VA, though I am employed as a full-time chief of thoracic surgery at the Veterans' Administration Medical Center here in Washington, DC. My academic affiliation is as professor of surgery, Georgetown University. However, I do speak on behalf of the National Association of VA Physicians [NAVAP], which I serve as its executive director. We do appreciate this opportunity to express our views and concerns about the subject matter of your oversight hearing.

Yesterday the committee heard of the many positive accomplishments of the Veterans' Administration. It is rapidly progressing with its plan to bring state-of-the-art data-processing theory and practice into support of its delivery of high-quality medical care to the Nation's sick and injured veterans. By year's end, each of 169 VA medical centers will have American National Standard MUMPS language and data base management operating systems up and running on modern hardware. Some centers have already begun to use clinical and administrative core program modules from that in-house developed cornucopia which will eventually benefit every aspect of health care for veterans.

The National Association of VA Physicians takes pride in the role it has played in bringing about this promising result in the face of diehard opposition by the agency's own 2,500 entrenched data processing technocrats, the nay-sayers who dream only of spending untold treasure on yesteryear's fantasy that the private sector, under contract, will ultimately produce a mainframe brain at the center of a network empire that would magically answer all of the veterans' medical program's questions.

When NAVAP entered the fray in the summer of 1981, we discovered that the prior decade had seen over $200 million having been squandered in such a futile effort with not a single usable product having been produced. With help from our friends in the veterans service organizations, the agency found itself under congressional mandate to stop this outrageous waste and to go forward with the program you heard described in yesterday's testimony. Incidentally, all that has been accomplished by the expenditure of less than half the funds that had previously been thrown into support of private-sector contracts which had produced nothing of value.

The one glaring residual exception to this recitation of accomplishment is the obligation forced on the agency by another committee of this body which mandated that three VA medical centers be served by data processing provided under contract with the private sector; 1 year ago the VA informed the House Appropriations Committee that the cost for support of these three facilities would be approximately $10.5 million. We now learn that the cost is projected to be $23.5 million for only prototype demonstrations on leased equipment, which will require an estimated additional $8 million for buyout, for a total of $32 million, three times last year's estimate; 1 year from now the realized cost may be twice that figure, or nearly as much as was spent to equip all of the other 169 VA facilities. But even that is not all. These three incompatible systems will be locked into ongoing proprietary vendor costs amounting to millions of dollars each successive year.

As I have listened to the testimony of the Department of Defense witnesses today, I have been awash with a sense of deja vu. Have I not heard the same outmoded arguments which had to be overcome in the Veterans' Administration just 3 short years ago? Have I not heard that the Trimis program will reject the course that has lead to the VA's rapid and economical acquisition of modern, data processing capability? Indeed, I think I heard of their intention to pursue the costly, outmoded, and nonproductive course forced on the VA by perhaps the same evil spirit that operates in this instance. If so, perhaps a DOD contractor's estimate that the Trimis ADP program is targeted for an ultimate expenditure of about $4 billion may not be far off the mark.

In these times of soaring Federal deficits and the obvious need to cut Federal spending, it is startling to find that the Department of Defense is preparing to squander such of our treasure when they can have the effective, in-house developed public domain software of the Veterans' Administration almost for free—and right now, not years later.

But even more appalling than such waste is their intention to squander our treasure on proprietary vendor systems incompatible with those of their sister agency, the VA. Are we not dealing with the same human being whom the Defense Department calls a member of the uniformed services and we recognize as DOD's only product, namely, a veteran? Is it not apparent that little consideration has been given to that same individual when in time of conflict or other national emergency the Veterans' Administration is called upon to care for casualties? Under such emergency conditions, it is mandatory that our patients not come to us with a chip, disc, or piece of tape, a medical record that might just as well be written in Sanskrit.

Our system is good. It is coming up and working. It has not cost an arm and a leg. The Department of Defense and the Veterans' Administration must not be permitted to acquire mutually incompatible medical information systems technology. Our patients must not be placed in such harm's way. And we offer it for free.

Here is a measure of that gift, Mr. Chairman. I would hope that you will accept for the record this sampling of VA ADP program abstracts, which we do here offer also to our colleagues in the Defense Department.[1] I am very sorry that Dr. Mayer and Dr. Mestrovich have left because, in addition, I have that copy for them, which I hope will be delivered to them.

Mr. **Montgomery**. Dr. Mestrovich is here.

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[1] Retained in committee files.

Dr. **Schafer.** Oh, he is. Well, good. I would like him to have it.

These abstracts which I am giving to you include a whole host of program modules in the VA DHCP library: registration, admission, discharge, scheduling, pharmacy, laboratory, and many others, totaling 99 programs. These do not include programs developed by NAVAP members using the VA's MUMPS, KERNEL, and file manager capabilities. These are but the first of our gifts, that we may all go forward together best to serve the interests of our brave countrymen and women in their time of need.

I thank you, sir.

[The statement of Dr. Schafer appears at p. 72.]

Mr. **Montgomery.** Thank you very much, Dr. Schafer, for that well done presentation.

Mr. Marcus, do you have a statement?

Mr. **Marcus.** Yes; I do.

Mr. **Montgomery.** OK. We would like to hear from you. Your full statement will be put in the record.

STATEMENT OF DAVID J. MARCUS

Mr. **Marcus.** Thank you, Mr. Chairman.

I am a MUMPS vendor. I do not work for the Government. I see the MUMPS world from a commercial perspective. Sensing an exploding market, we at Micronetics have developed a MUMPS compiler for a wide range of hardware, ranging from a single-user personal computer version to a multi-user UNIX version. The personal computers we support include the IBM/PC and its many derivatives, the WANG/PC, the DEC Rainbow, Tandy T2000, and many others. We also provide a multiuser MUMPS compiler under UNIX for systems such as the Motorola 68000, the Perkin-Elmer 3200 family of processors, the DEC VAX machines and so on.

We have been in business for nearly 4 years. Our clients include some of the Fortune 100 companies. We have several contracts with large firms to distribute our MUMPS on their hardware throughout the world with several more under negotiation.

Since we have started, we have seen a dramatic increase in the use of MUMPS, much of it attributable to the growth of MUMPS usage thorughout the Veterans' Administration. With the advent of our MUMPS compiler for the personal computer, we see many users who would otherwise not be classified as programers—and physicians certainly in the VA belong to that category—use the VA's file manager to develop some fairly impressive applications. These same users would otherwise shun the computer. We have seen users who have been frustrated after many futile attempts at coding applications in BASIC or PASCAL turn to MUMPS and whip off the application in record time.

This usage has not been limited to the medical sector. Analysis of our customer base reveals, for example, that while the predominant usage of MUMPS domestically is in the medical field and related areas, there are many applications using MUMPS and the file manager in other diverse fields. We ourselves, for example, are now wrapping up a large project for a prominent national company in the alarm industry that could not have been completed on time without file manager, given the requirements and the time constraints. Internationally, most MUMPS applications that we see tend to be in the commercial sector for such things as inventory control, financial analysis, data base management, and so on.

With all the glory of MUMPS, there are still some difficulties in promoting it. Most of these difficulties are related to its origin, its name, and its users. Many people reject it purely on the basis of its name or the incorrect stigma that it is a medical language. Some reject MUMPS on the basis that since they have not heard of MUMPS before, it clearly can't be any good. That may have been the case in the past, but certainly it is no longer true today. Underlying many of these problems is the fact that MUMPS is not being evaluated with the proper purpose in mind.

I think the time has come to rationally and objectively evaluate how and where the MUMPS language can best be utilized in the life cycle of an application system. This cycle includes design, implementation, maintenance, and, of course, delivery of the application services to the end users. All too often we find that for new applications the choice of languages and systems are dictated by momentum generated by precedents. Typically, because COBOL or FORTRAN was used on another project, which may not be at all related to the present one, they may be selected again even if a shoehorn is required to make the language fit.

In other circumstances, languages are specified because programmers are a dime a dozen and, hence, easy to find. At times a slick salesman promises any support needed, or more correctly, needed to sell a piece of hardware. We even hear the excuse that some languages are a safe bet, which is not likely to be questioned by others. This list of official reasons to choose a particular language for an application is quite lengthy and amusing, indeed. However, I point out that the key question of suitability is rarely asked. How often have you seen a statement in the analysis of a system mention that several existing products were evaluated and found not suitable? How many times have you seen an evaluation that estimated the cost of an application based on different languages used? Frankly, I have seen none. Existing systems are usually dismissed offhand due to the not-invented-here syndrome. The language to be used is usually a given and not an option that is seriously considered.

I would like to offer just a simple analogy between computer languages and cars to bring a point home. They both convey things. Cars convey materials, while computer languages convey instructions to the hardware. Continuing with this analogy a bit, we see that some cars have big engines, of course, some small, and others use diesel fuel, while many use gasoline. Some are equipped to carry heavy loads, while others are equipped for speed. Similarly, some computer languages are designed to facilitate scientific calculations—for example, FORTRAN and APL. Others are ideally suited for large data base information management—languages such as MUMPS. Some are targeted toward artificial intelligence, while others deal with lack of machine intelligence, things like numerical control. Each language provides the programmer a simple, straightforward way to express the action to be performed by the computers.

This analogy, of course, can only be stretched so far. However, the moral of this story is that, like cars, computer languages come in different makes and models. Each serve a particular function well, but in the wrong environment they function quite poorly. We would hardly consider getting a 10-ton Mack truck for commuting into the District of Columbia to work on the Hill, nor would we conversely consider buying a 4-cylinder subcompact to tow heavy construction gear. Similarly, we would hardly consider using MUMPS to simulate a nuclear reactor in three dimensions, or consider using FORTRAN or COBOL to build a system as flexible as the file manager.

Finally, I would like to illustrate the importance of selecting the correct language by posing the following: Imagine, if you will, what if building architects had to use words instead of building blueprints. Imagine what if all U.S. air traffic controllers spoke no English. That's an example of using the incorrect language. I need say no more.

The message by now should be abundantly clear. Every computer language offers benefits and drawbacks. To ignore the benefits of the software technology offered by MUMPS may be a case of winning a battle but losing the war.

Thank you.

[The statement of Mr. Marcus appears at p. 74.]

Mr. MONTGOMERY. Thank you, Mr. Marcus. I appreciate your examples there. I would hate to think what would happen if we had U.S. air traffic controllers that couldn't speak English. I would hope that doesn't happen in our hospitals. We wouldn't have many people walk out of there alive. Thank you for that very good statement.

Mr. Davis, I don't believe you have a statement, do you?

Mr. DAVIS. No, sir.

Mr. MONTGOMERY. Thank you for being here today.

Dr. Schafer, I can maybe criticize the Defense Department, in that I am probably one of the great supporters by my voting. I serve on the House Armed Services Committee. I am familiar with dealing with the Defense Department. I guess it is just kind of human nature that the Defense Department and other departments of the Federal Government really sometimes don't think the Congress is on top of the situation and that they don't have the abilities.

I went back and looked at the House Armed Services Committee. We have more talent, more people that served in the service, more people that have been around longer than there have been in the Defense Department. They come in 4 years and they leave. That's both military and civilian.

Basically the same thing applies here on the Veterans' Affairs Committee. What the Defense Department is saying here is they have to study this matter, they have different problems than you have at the veterans hospitals. That's basically what the Defense Department says on every issue when they disagree with the Congress. I'm not saying we're in disagreement, but I think your statement points out that there could be a big waste of money here if somebody doesn't get serious in the Defense Department and take a look at these different computers and see if we can come up with something that saves the taxpayers money and yet does the job that needs to be done.

You have stated that the MUMPS system could help the services and they are really, in effect, giving us lip service over there at the Defense Department.

Dr. SCHAFER. Actually, in my statement, Mr. Chairman, it should be noted that we found in the VA, when this issue first was engaged, that that agency had spent just about the same amount of treasure with no result as was admitted by the Trimis witness here this morning that they have spent, with very, very little result to this time, namely, about $200 million.

We engaged the issue in the VA 3 years ago, so we are well on the road to a new course. That is what I meant by my sense of having been here before when I testified, because hopefully we're going to go on a new course with respect to the Defense Department and its medical ADP technology. I hope that is what is going to happen, because we must go down this road together. We treat the same patients, just simply at different times in terms of their need. I hope that message has come through loud and clear from you and from the witnesses here.

Mr. MONTGOMERY. Dr. Schafer, you are right on target there. In my experience, unless we keep the pressure on them, the Department of Defense will move ahead with this other program and they will spend all this money. Unless we keep their feet to the fire, they're going to ignore this committee and the testimony that has been made here today. That's the way they operate. You just have to take a 2 by 4 and hit them right in the head. Then they'll pay a little attention to you. But that's the only way we're going to get anything done. I've been around here 18 years, and will be here 2 more years, and I have learned that's the way you have to deal with them.

Having said that, they're patriotic, love their country, as all of us do. But they have been operating on their own over there and you just have to kind of bring them back in the mainstream and let them know there is a Congress and there is some concern about spending of the taxpayers money. Then we will get some action.

Mr. Staggers.

Mr. STAGGERS. Thank you, Mr. Chairman. I want to compliment the two gentlemen for their statements.

My questions would be directed to Mr. Davis. Mr. Davis, under your capacity you are aware of the MUMPS system; that is under your——

Mr. DAVIS. That's correct. I am a site manager at the VA facility in the field.

Mr. STAGGERS [continuing]. Can you tell me, is it possible for an evaluation test of the VA MUMPS system that takes place at a DOD hospital located near a VA hospital using excess VA disc capacity?

Mr. DAVIS. I would expect that to be a reasonable proposition; yes. In the early days the VA used excess capacity in our existing systems to leverage out training and familiarization to other sites that did not have equipment, so we have some experience with that in the past internally. I would imagine, subject to the test not interfering with ongoing clinical activities on those machines, that

that would be reasonable, particularly in the early stages of the present installations where systems are not fully utilized. It takes a while to bring a system up to a point where all the resources being provided will actually be in active use.

Mr. STAGGERS. So you have had experience with that and it has not been an adverse type of—it would be possible?

Mr. DAVIS. Yes. But that is based on the assumption that the existing commitments and the hospital involved would permit that to take place.

Mr. STAGGERS. In your opinion, can you tell me how long it would take for a DOD hospital to install the VA basic core system of the DACP and have it operating?

Mr. DAVIS. For a DOD facility?

Mr. STAGGERS. Yes, sir.

Mr. DAVIS. To take the existing VA technology from a typical hospital. Can we limit that, say, for example, to the current ADT scheduling and pharmacy applications? Would that be reasonable in your mind?

Mr. STAGGERS. The core system.

Mr. DAVIS. The core. The initial core? OK, fine.

Based on delivery as a key point in time, there would be some preliminary or site preparation activities and staff training activities requirements. Those could take as long as 90 days or as little as 2 weeks. Upon a receipt of equipment, installation, as far as vendor installation, could be as little as 5 working days. It might stretch out to 30 days. There are many reasons why that is an indefinite period.

Subsequent to turnover to the site, depending upon how the special software arrives, it could come in bundled and could be a turnkey activity, or it might be the system would be configured on site. Timeframes for that last stage could range from as little as 10 days up to 180 days. One hundred and eighty days is how long it takes to bring a pharmacy up to speed, assuming the refill cycle is a 6-month cycle.

Mr. STAGGERS. Thank you, Mr. Davis.

Mr. Chairman, I have no further questions.

Mr. MONTGOMERY. Thank you.

Dr. Rowland?

Dr. ROWLAND. Thank you, Mr. Chairman.

Dr. Schafer, in the support relationship between ODM&T and the department of medicine and surgery, what do you think would be the most productive action that could be taken to improve the ADP support for the VA hospitals? Some people told me there might be some conflict between those two at this time.

Dr. SCHAFER. I can think of a number of things, Dr. Rowland, that would be very helpful. I guess I would put as my first priority one that seems to me to be already embodied in promises made and even in the famous executive order with which we are all so familiar, namely, that as this DHCP effort really got underway the promise and, indeed, the requirement was that some of those 25-odd hundred ODM&T employees, at least FTEE, would be progressively turned over to support the very, very major personnel requirements we have fully to implement and effectively to use the hardware and software that are embodied in the decentralized program.

That has not occurred. I believe, if I recall correctly, that the official ADP plan of the agency and the budget proposed for fiscal year 1985 even shows that there will be an increase of some 200-and-some ODM&T employees. This is on a base of still having that basic 2,500 or so that in the face of the fact that the DHCP is greviously underfunded, understaffed. We need far more people fully and quickly to accomplish the objectives of the program. So at that level alone I think that would be a very important development that hopefully would occur.

Dr. ROWLAND. We heard yesterday from Dr. Brown and Mr. Alverez that everything was just fine. It was all going along all right. I asked that specific question of them.

Dr. SCHAFER. Unfortunately I was operating almost all day yesterday and I couldn't be here to hear the testimony. But I don't understand on what basis Dr. Brown would have made that statement because I know for a fact, personally, that we now have our really few creative people doing such things as installing sites. That's a grevious waste of this great talent that we have got in the DHCP program.

I can't be absolutely sure of the numbers, but I would doubt if we have as many as 30 really competent MUMPS programmers in our six VDC centers, and perhaps no more than that scattered out to the sites. I would defer to Dr. Davis because he's much more familiar with that. But I definitely feel we are very much short of the personnel we need to make the DHCP work.

Now, correlated with that is something that is not insignificant. I think I saw again in the proposed fiscal year 1985 budget that we're still siphoning out or bleeding out, however you want to express it, some $10 or $12 million of DM&S funds in terms of supporting ODM&T functions for DM&S. But when you look at the published ADP plan of the agency, and you go down through the itemization of all of those functions, you find that a very large number of them could so easily be just shifted over to the DHCP, and that has not occurred.

Dr. ROWLAND. I understand there is high level personnel still in ODM&T and DM&S suffering from the lack of this quality of personnel. Is that right?

Dr. SCHAFER. I believe that is true.

Dr. ROWLAND. Let me ask you one other thing about the relationship between Trimis and the VA. Is the Trimis office allowing the three services now to participate in the test or evaluation of the VA MUMPS system? Is that taking place now and to what extent?

Dr. SCHAFER. I don't think I heard the operative front part of your question.

Dr. ROWLAND. The Trimis office, is it allowing the three services to participate in the test or evaluation of the VA MUMPS system?

Dr. SCHAFER. Well, I don't pretend to be knowledgeable about all such relationships, but I am not aware of any such tests that are underway. I would think, in answer to your question, that a reasonable suggestion would be that since the Defense Department already is conducting evaluation of hospital information systems from the private sector in three of its facilities, they might seriously and favorably consider implementing such tests of the MUMPS in three such facilities, perhaps one from the Army, one from the Navy, and one from the Air Force, and that they would divert the same amount of funds they are expending for testing their vendor-provided systems on testing of the MUMPS, and if that amount of money would allow testing of MUMPS in more than three sites, then by all means let's get the most we can for our money.

Dr. ROWLAND. Mr. Chairman, I have two or three more questions that I wish to ask, although my time is up. May I proceed?

Mr. STAGGERS [presiding]. You may proceed.

Dr. ROWLAND. Thank you.

Mr. Marcus, the objection has been made that the MUMPS base information systems are difficult to maintain because of the cryptic nature of the MUMPS program code. Is this a valid objection?

Mr. MARCUS. Well, maintenance is a function of size and complexity of the code. Based on that, in my experience, MUMPS applications tend to be significantly shorter than the total amount of code required to do the function. So I would say that objection definitely is not valid.

Dr. ROWLAND. MUMPS has been described as an old programming language and therefore not suited for forward-looking information systems projects. Is this characterization of MUMPS valid, do you think?

Mr. MARCUS. Not at all. MUMPS is actually younger in age, I believe, than FORTRAN and COBOL are. In the past, in fact, MUMPS was probably ahead of its time more so than it is today. I think other languages are playing catch up.

But just as an indication of how MUMPS is an evolving language, it is certainly not stagnant. There are things like the MUMPS development committee that meets twice a year informally, that is in charge of evolving the language in such a way that old applications continue to run while new language concepts are embodied in future versions. By the way, that committee is composed of both the vendors and users, so I think we get an indication from the field of what, myself being a vendor, what the users want. I think the fact that the users are the ones that buy our systems, they dictate my salary indirectly. Therefore, we tend to listen to the types of things the end users want to see. As a result, I think MUMPS improves.

On the kinds of things that one would characterize MUMPS, things like highly modular, interactive, efficient execution and so on, those are the things you hear about the new languages. Yet that has been true for MUMPS for several years. So I would actually think this characterization is definitely not valid.

Dr. ROWLAND. The file manager and VA KERNEL system have been criticized as being inefficient in the use of hardware resources. What is the assessment of computer systems engineers on this question?

Mr. MARCUS. Well, my degree, by the way, is in computer science from Columbia University. I will step back a bit and talk about the MUMPS language, if I may.

I know several PDP—these are DEC equipment, 1170's—that run 40 to 70 users concurrently. I do not know of a single PDP 1170 that runs more than 20 or 30, say, UNIX or COBOL users. So I think MUMPS as a language offers extremely efficient utilization of the hardware. The efficiency is still a function of services rendered, not speed of execution. If a program is not doing anything valid, I don't care how fast it is. I think, if you just look at the use of file manager, we typically market MUMPS on micros that run 16 users on a small desk-sized micro. I don't know of a single application written in COBOL of significant value that would do that. So I think, if anything, the file manager is extremely efficient in its usage of the hardware.

Dr. ROWLAND. MUMPS has been made to be a fourth generation language. Please explain what this means and what its significance is for the VA DHCP and potentially for the DoD Trimis program.

Mr. MARCUS. Well, the truth is, I'm not sure what a fourth generation language is. Language goes through several iterations, if you will, and people tend to, like in the electronics industry, talk about transistors and so on. I think, realistically, what the significance of MUMPS is, can it do the job, can it do it efficiently, cost effectively, can it be easily maintained, what's the total cost of the application through its life cycle. It is in that sense that I think MUMPS is a very good choice for some things.

The last language that I ever learned was MUMPS. The first language I ever learned was FORTRAN, and then I went on to other languages. So I have had the occasion to be proficient, if you will, in several other major languages. My first reaction when I learned MUMPS—and, by the way, I learned MUMPS from our own implementation—was "my goodness, why haven't I run into MUMPS before."

As an example, personally, if I code an application and it takes me more than a week or two in MUMPS, I consider it a very large application. Many of the applications that we do for our customers are significant, in terms of function of delivery of services to the user, and takes us several weeks at most. So in that sense, if that's fourth generation language, by all means, yes.

Dr. ROWLAND. What data is available to indicate the comparative cost effectiveness of MUMPS-based systems in comparison with other software technologies and programming languages?

Mr. MARCUS. To the best of my knowledge, there have been several studies published throughout the literature in past years that compared MUMPS, COBOL, and FORTRAN, and several other languages. The last thorough one that I am familiar with was done in Spain with no particular financial tieback to the United States. They found that MUMPS applications tended to be somewhere between the order of 5 to 10 times as small or one-fifth to one-tenth the size in total amount of code, and maybe one-half to one-third the amount of disc space required.

Let me translate that into some concrete meanings. When an application is short, the number of lines of code is measured not by the ton but, rather, by the hundreds. Then it is much easier to maintain than going through stacks, 3 or 4 feet stacks of COBOL code. So I think MUMPS needs to be looked at, in whatever field it's being applied.

As an example, if you were to apply MUMPS in a scientific world, such as simulation of wind tunnels or something, MUMPS is absolutely a very poor choice. But when you're talking about manipulation of information, large data bases, MUMPS was designed and invented specifically for that. I think that is really the issue here. Some things MUMPS is very good for. This is a good example.

Dr. ROWLAND. Thank you, Mr. Marcus, Dr. Schafer, and Mr. Davis.

I have no further questions, Mr. Chairman.

Mr. STAGGERS. Mr. Davis, I would like to follow up on my questions earlier.

Can you tell me how much money has the total MUMPS program cost at Lexington?

Mr. DAVIS. Lexington is in a special category, I must say in the beginning, in that our developments have occurred prior to the current DHCP program. Lexington was a so-called phase I site prior to that, and the initial equipment installation at Lexington occurred in January 1979, as a result of purchases made in the previous fiscal year. It is that equipment that I will address to answer your question.

The investment there in hardware terms is approximately $250,000.

Mr. STAGGERS. Relatively speaking, that's inexpensive, even for the initial——

Mr. DAVIS. In terms of 1979 figures, it was on the low end of what systems might have been purchased as alternatives, yes, sir.

Mr. STAGGERS [continuing]. Dr. Schafer, can you tell me how much nationally the MUMPS program has cost?

Dr. SCHAFER. I don't believe I'm competent to answer that question. It seems to me that I recall the original acquisitions came out at something projected under $100 million. I believe that that is close to being accurate in terms of initial and subsequent expenditures. That's for the whole system, clear across the country, 169 medical centers.

It looks to me like Mr. McDonnel may have an accurate figure.

Mr. STAGGERS. Relatively speaking, is it inexpensive?

Dr. SCHAFER. Inexpensive? Well, it would seem to me, for the services being rendered, for a whole nationwide health care delivery system, yes, that is a reasonable figure. That was the figure I used, incidentally, in my testimony when I said that we were doing what we're doing for roughly half of what we had wasted in the prior decade. We wasted $200 million. Also, I related to the fact that a DOD contractor's estimate of the Trimis target is $4 billion. So I think that the $100 million figure certainly has to be considered as a bargain.

Mr. STAGGERS. Any further questions?

We will be submitting some additional questions to all the witnesses for the record. We would appreciate a timely response.

I want to thank all the witnesses who testified, and this hearing will now be closed.

[Whereupon, at 10 a.m., the subcommittee was adjourned.]

APPENDIX

STATEMENT OF EVERETT ALVAREZ, JR., DEPUTY ADMINISTRATOR, VETERANS' ADMINISTRATION

Mr. Chairman and Members of the Subcommittee: I am pleased to appear before this subcommittee to discuss the VA's plans and activities in the areas of automatic data processing, office automation, and telecommunication systems.

Fundamental changes are occurring in the VA ADP program. They result from changing needs, changing technology, and an emerging management philosophy focused on a broader and longer term view of the Agency's ADP and telecommunications needs. To fulfill the Agency's mission and specific Departmental objectives, we need a flexible and responsive range of ADP services. Consequently, our program includes both centralized and decentralized technology and skills. This combination will enable us to satisfy complex needs for information, respond to unique programmatic needs and services, and most effectively use technical resources and Agency information. Complementary administrative changes include new polices, delegated authorities, and a planning and management system that permits us to identify our requirements. It is the emphasis upon an Agency level program that I wish to outline today. Following me, Miss Starbuck, Dr. Brown, and Mr. Sharkey will address more specifically the plans and activities of their respective organizations.

The mission of the Veterans Administration is to serve America's veterans and their families with dignity and compassion and be their principal advocate in ensuring that they receive the care, support and recognition they earned by serving our nation. Our goals for accomplishing our mission are as follows;

(1) To ensure that quality medical care is provided on a timely basis within the law to all authorized veterans;

(2) To ensure that an appropriate level of benefits is provided within the law to eligible veterans and beneficiaries;

(3) To ensure that the memorial affairs of eligible veterans are appropriately provided for and conducted in a dignified manner, which recognizes the honorable status of veterans; and

(4) To provide timely, high quality health care, benefits, and services to veterans and their families as efficiently as possible.

The policy of the VA is to acquire and use automatic data processing, office automation and telecommunications technologies to improve services and program management, and increase productivity. This requires user friendly technology in departments and staff offices, with access to centralized information systems. We must respond to managers' requirements for information, and facilitate collecting and maintaining this information.

The Associate Deputy Administrator for Information Resources Management has overall responsibility for developing and recommending ADP and telecommunications planning and policy to the Administrator. This responsibility is assigned in accordance with the intent of the Paperwork Reduction Act of 1980.

Under my direction, the VA is continuing to review its ADP policies in coordination with departments and staff offices, to reflect the impact of technological changes on our users, and their increasingly active role in employing this technology. These policies will enable the VA to take an increasingly broader view of its data processing mission. With today's technology, computer resources can be shared and efficiently used without sacrificing user control. VA elements are working together to acquire hardware and software to meet the functional requirements of multiple users, who share common data where appropriate.

The increasingly active role of the user is exemplified by the Administrator's delegation of authority to the Chief Medical Director, to allow greater flexibility in managing ADP in VA medical centers. The Administrator has also delegated authority to the Chief Benefits Director to acquire microcomputers.

New policies recently approved by the Administrator provide clearer definitions of responsibilities and accountability of Department Heads, Associate Deputy Administrators, and Staff Office Directors. We've established management approval thresholds for office computing resources. This delegation of authority promotes greater line management roles in these decisions, resulting in more effective use of ADP technology. Corresponding with this authority is their responsibility to plan and justify these acquisitions.

The policy also establishes an ADP User Group to provide a forum for feedback on Agency policy and plans, and other relevant issues. We have also established special user groups to address specific areas of our ADP and telecommunications program.

Our major automation priorities are to:

Continue the great strides the Department of Medicine and Surgery is making in introducing computers into VA Medical Centers under the Decentralized Hospital Computer Program.

Augment the Target System and redesign the Insurance and Loan Guaranty systems to provide better service to the Department of Veterans Benefits.

Facilitate the use of office automation in the Department of Veterans Benefits and other departments and staff offices, and provide a vehicle for these organizations to acquire this technology through an Agency level contract. I should add that this vehicle is not prescriptive. It allows special needs, such as those of VA medical centers, to be addressed independent of the contract.

Upgrade our computer systems at the Austin Data Processing Center to export the capabilities offered by new technology for data and technology sharing, through direct access to our centralized data bases.

Provide a telecommunication utility. The VA Data Transmission System will provide the communication line necessary for VA department and staff offices to share and exchange data.

In response to changing user needs and the growing ability to use ADP technology in new ways, we've developed a systematic approach to our ADP Program. This approach focuses on three major management strategies.

System Design and Integration Management, Telecommunications, Integrated Computing Support Services.

These strategies focus on Agency-wide data and technology sharing, to complement our efforts to put technology in the hands of the end users.

SYSTEM DESIGN AND INTEGRATION MANAGEMENT

This strategy promotes greater and more timely access to the store of VA data. It includes the internal use of information specific to a department or staff office, as well as an awareness of the need to share general purpose data among departments and staff offices, where appropriate.

As an example, let's take the VA data found in the Benefits Delivery System for the Department of Veterans Benefits. The Department of Veterans Benefits collects and is the chief user of the data in the benefits data bases. The Department of Veterans Benefits uses that data to determine basic eligibility for entitlement to the entire range of veterans benefits.

The Department of Veterans Benefits and the Department of Medicine and Surgery's Information Exchange Project demonstrates our new focus on information sharing in VA programs. In this project, we're developing a method to exchange medical and eligibility data between the Department of Medicine and Surgery and the Department of Veterans Benefits. VA Medical Centers will then be able to access the Benefits Delivery Network, using its data to determine patients' eligibility for medical care.

The Department of Medicine and Surgery and Department of Veterans Benefits' Information Exchange Project will also automate selected medical and administrative forms processing. This will provide immediate access to the information on the forms by telecommunications between Regional Offices and VA Medical Centers.

The planned Automated Monument Application System also illustrates the value of information sharing within the Agency. One of the first notices of a veteran's death is the request for burial. When this notice is received, the data will be passed automatically to the Department of Veterans Benefits' data bases. This data will provide an automatic stop payment to active benefits, thus preventing overpayments. The action will also activate the request for insurance claims, providing faster service to veterans' survivors in a time of need.

These information exchanges serve as prototypes for other system design and data integration activities in the VA.

TELECOMMUNICATIONS

This strategy focuses on the concept of VA data communications as a utility, available for all Agency programs to access and transport data. While there are several networks in place today, including the dedicated TARGET network and the VA Data Transmission System, our strategy is to progressively integrate these services. In that way, we can address a wide range of VA needs through a cost-effective communications utility. This strategy plays a key role in our plan to share and exchange data within the VA, as well as assist the Department of Medicine and Surgery in executing the Decentralized Hospital Computer Program. To accomplish that, we need an adaptable and flexible transport mechanism, such as an integrated network.

INTEGRATED COMPUTING SUPPORT SERVICES

This strategy promotes the use of new and emerging technology to improve services and support organizational data needs. This strategy focuses on both centralized computer systems, and decentralized equipment and skills. As I mentioned previously, we are upgrading our equipment at the Austin Data Processing Center. Our goal is to provide on-line access for users to the centralized data bases, so they can satisfy their own information needs with their distributed technology. For example, management data contained in our centralized administrative systems, such as the Automated Management Information System, can be made available electronically to users to manipulate as needed to satisfy their information needs. To complement this strategy our successful Information Technology Center is promoting and guiding end-user computing, and helping to develop computer literacy skills.

These changes, in the way the VA manages its ADP resources and services, will facilitate our efforts to improve data access, data movement and Agency technology and skills.

This concludes my prepared statement, Mr. Chairman.

STATEMENT OF DOROTHY L. STARBUCK, CHIEF BENEFITS DIRECTOR, DEPARTMENT OF VETERANS' BENEFITS, VETERANS' ADMINISTRATION

Mr. Chairman and Members of the Subcommittee: I am pleased to outline for you the activities of the Department in data processing, office automation and interchange of data.

The ADP plans of the Department of Veterans Benefits center on the systems now operative—the Compensation, Pension, and Education System, the Loan Guaranty Systems, the Insurance System, Centralized Accounts Receivable System, and Beneficiary Identification and Records Locator System (BIRLS) System to which the VA Discharge System is an adjunct. At the same time the Department has moved toward office automation, an effort which involves text processors, personal computers, and intra as well as inter office and inter department communications.

Within the Department there is being established a staff element which will be designated as the Information Resources Staff. We expect selections of the Director of that staff in the immediate future and his/her selection of added staff thereafter. This group will provide for the Department control and direction of all initiatives in automatic data processing, as well as office automation. This staff will relate to and work with data processing personnel in each of the Department's services as well as with its counterparts in DM&S, DMA and ODM&T.

I would like to briefly cover the immediate initatives in each of the systems extant for the Department's services.

With respect to the CP&E system we are working toward the realization of three major improvements: First the generated awards which will complement the existing system on education awards. We anticipate installation in June, 1985. Second, the dedicated award printing and we look for implementation beginning in November and continuing to completion by next June. Third is overnight updating of the master record to displace the current cyclical update system. This is a step necessary to get us eventually to on-line data entry capability. Our efforts in this are just beginning.

We are actively pursuing redesign of 3 major DVB systems to incorporate state-of-the-art technology and take advantage of on-line capabilities. We have already achieved an on-line inquiry capability for our Insurance System. Work is underway to provide on-line processing, for example submission of insurance award information. The effort should be completed by 1987.

Based upon approval, in January 1984, we are redesigning our Loan Guaranty System. Here, too, we are going toward on-line access and more sophisticated processing. The redesigning processing will be installed in phases over a 2 year period, 1986–1987.

Our BIRLS System, the basic veterans' records locator and identification system for the VA, is also being redesigned to take optimum advantage of on-line capabilities. The phased installation is expected to be completed during 1986.

Each of these redesign efforts will provide improved processes for our regional offices as well as those 2 departments requiring access to data in these files.

We have other initiatives in process which will streamline basic DVB operations. We are developing a revised system for controlling reviews of fiduciary accounts for veterans, and other beneficiaries who receive payments through appointed representatives due to mental or legal disability. We are automating the Chapter 31, vocational rehabilitation payment system, which is now a manual system.

We are providing for increased interaction between the basic DVB systems and AMIS (Automated Management Information System). By decreasing manually prepared submissions to AMIS, we are improving overall quality and availability of management information. This aids our planning process.

Office automation has high priority in DVB's immediate planning. We have tested use of a system in the Department at Central Office and 3 field stations. Based on favorable experience, we have expanded the system to 7 additional field stations. The Department expects to expand office automation capability to all DVB facilities in the FY 85 and 86 time frame.

DVB office automation includes the use of PC's (personal computers). The Department has procured a number of PC's and plans to make them an integral part of the office automation network. Microcomputers offer unique opportunities for locally developed systems; however, the Department maintains oversight of the PC's to assure effective use of the equipment.

Both DM&S and DVB have cooperated in a test of computer exchange of information involving the Albany Medical Center and the Regional Offices in New York City and Buffalo. This involves computer processing of requests for eligiblity for hospital admission and notices of change in patient status, as well as requests by the Regional Office for physical examinations. This test is an interim response to a specific need for expedited turn around of information between the Departments and will be useful pending the completing of plans being developed by DM&S, DVB and ODM&T which link the DM&S DHCP with the DVB CP&E system via VADATS.

Mr. Chairman, we will continue our efforts in consonance with the overall Agency objectives in ADP and will realize the benefit of a more productive work force through automation. I will be pleased to answer any questions you or Committee members may pose.

STATEMENT OF D. EARL BROWN, JR., M.D., ASSOCIATE DEPUTY CHIEF MEDICAL DIRECTOR, DEPARTMENT OF MEDICINE AND SURGERY, VETERANS' ADMINISTRATION

Mr. Chairman and Members of the Subcommittee: I am pleased to appear before you today to discuss the Department of Medicine and Surgery's plans and activities in the use of automated data processing, office automation, and telecommunications systems.

Providing modern computer capabilities to every VA medical center is one of our highest priorities. Computers are essential in support of clinical and administrative functions of the medical centers and for efficient and effective management information systems serving all levels of DM&S. As workloads increase and modern health care becomes more complex, it is imperative for DM&S to make the most effective use of information resources in support of this mission. Since February 1982, when the VA Administrator established a policy of decentralized computer operations for VA medical centers, DM&S has made great strides in the area of information resource management.

STATUS OF DHCP

The Decentralized Hospital Computer Program (DHCP) was initiated to carry out the rapid deployment of computers to VA medical centers to first enhance priority clinical and administrative functions and then address other critical areas of support. Systems are based on user-responsive software developed in a medical environment. The individual medical center directors have a significant role in the implementation and are responsible for the operation, application and successful utilization of these systems in each facility. Local procurement authority has been expanded to allow medical centers to purchase ADP equipment and software below established thresholds without Central Office approval. For more expensive acquisitions, the VAMCs may gain approval in conjunction with the MEDIPP planning process. Software applications to add to the CORE Systems may be developed locally and mechanisms are being established to share these programs. Overall, the DHCP represents a major change in the authority, responsibility and flexibility of each medical center with regard to computer acquisition and utilization.

The accomplishments to date have been impressive. A substantial acceleration in our procurement/implementation strategy for the DHCP, which was championed by this Committee, has made it possible to provide Initial CORE equipment and software (Medical Administration and Outpatient Pharmacy) to all VA medical centers in 1984. This will be followed, in Fiscal Year 1985, with additional equipment and software for Full CORE (Inpatient Pharmacy and Clinical Laboratory).

Through the joint efforts of field and Central Office staff, DM&S has completed the largest computer procurement in this Agency's history. During fiscal year 1983, we competitively awarded contracts for over 13,000 video display terminals, 800 modems, 7,700 printers, 352 laboratory interface devices and over 400 mini-computers. The 52 medical centers that are now operational are using initial shipments of this equipment to implement the Initial CORE functions. By the end of the calendar year, all medical centers will be able to operate the Initial CORE software. Additional equipment deliveries are scheduled in support of the Full CORE applications. We currently anticipate that all Full CORE hardware deliveries will be completed by May 1985.

We are planning, in Fiscal Year 1985, procurements for one additional computer processor for each of the 32 Class V medical centers, our smaller hospitals, to provide backup and fail-soft capability. Bar code readers and printers in support of medical records and radiology film tracking are also in our procurement plans. A contract for automated plastic card embossers will be awarded in FY 85. This equipment will be directly connected to the DHCP systems to automatically generate patient ID plates at time of admission. Also in FY 1985, an additional acquisition is projected to round out previously purchased configurations in support of the Enhanced DHCP software such as Radiology and Dietetics.

Our success is closely linked to the extensive training program implemented in support of the Decentralized Hospital Computer Program. DM&S Regional Medical Education Centers (RMECs) have conducted Initial CORE applications training for over 500 medical center participants during the last fiscal year in conjunction with the Verification and Development Centers (V&DCs), the Medical Information Resources Management Office (MIRMO) and the Initial CORE Special Interest Users Group (SIUG) members. In turn, these individuals have returned to their medical centers and trained their respective pharmacy and MAS staffs in the use of the applications software through remote access to V&DC training systems. This has allowed hospital training to occur even before arrival of the DHCP hardware.

In addition, 250 medical center ADP managers and technical representatives have received vendor training at the Hines Verification and Development Center. Many of these same individuals will receive advanced vendor training at Hines prior to the end of the calendar year. In Fiscal Year 1985, we anticipate training an additional eight hundred employees in the use of the Full CORE applications.

The enthusiasm and interest the program has generated, both within and external to the VA, is beyond our expectations. We are processing requests for information and copies of software on a daily basis. During the last year, government officials from Canada, Australia, and China have visited our medical centers and Central Office to learn more about the DHCP approach. The Department of Defense has conducted extensive studies of our software. Indian Health Services has conducted many site visits and they are evaluating plans for possible use of VA developed software. In November 1984, a joint Veterans Administration/DOD session, hosted by the VA, will be held in conjunction with the Society for Computer Applications in Medical Care (SCAMC) Conference in Washington. At this session, topics of mutual interest related to medical ADP and DHCP will be discussed in a round table environment.

Within the Agency user requests for DHCP support also continues to grow. In early 1983, there were active Special Interest Users Groups (SIUGs) for Medical Administration Service, Pharmacy, Laboratory and Mental Health. That number has expanded to include Nursing, Dietetics, Social Work, Radiology, Engineering, Fiscal, Dentistry, Nuclear Medicine, Surgery, Geriatrics and Library Services. Rehabilitation Medicine, Medical Media and Voluntary Services have also indicated interest in DHCP software development.

One of the great challenges of the next two years will be the creative use of our field and Central Office DHCP personnel resources to maintain the ongoing CORE systems while supporting this ever-expanding user base. Although DHCP accomplishments are impressive, getting computers into the hospitals is only a first step. We are building a strong base for continued success with such activities as the introduction of medical center initiated ADP planning through the Medical District Initiated Program Planning (MEDIPP) process. This year we produced, for the first time, a DM&S ADP budget request based on individual medical center submitted plans. Reviewed and approved by regional management and Central Office officials, these initiatives comprise a remarkable array of ADP applications by and for the medical centers.

Our current DM&S ADP organizational structure distributes authority and responsibility among several organizational entities—the VAMCs; the Regional Directors and their six Verification & Development Centers (V&DCs); and, in VACO, the Associate Deputy Chief Medical Director and his Medical Information Resources Management Office (MIRMO). There are also significant roles for individual medical program offices and the Special Interest User Groups (SIUGs). The remarkable progress over the past two years attests to the effectiveness of this structure.

Automating the capture of data to meet current VA-wide management reporting requirements is an important byproduct of each VAMC's DHCP system. Capture of management information as a byproduct of operations will both improve the accuracy of the information and reduce the investment of hospital staff time now used to produce it manually.

An MIS Task Force was created toward the end of 1983 and charged with developing an information system to support the comprehensive, decentralized, population-based planning and budgeting process being implemented in DM&S and to provide local managers with enhanced tools for hospital decision-making.

The concept of a Decentralized Medical Management System (DMMS) is being developed. The DMMS will have a medical orientation and involve physicians more in the total decision-making process; it will integrate medical, financial and administrative data bases within the hospital; and it will be decentralized and specific to each facility, yet capable of networking for district, regional and nation-wide needs. In each VAMC, data for the DMMS will be automatically extracted from DHCP operating modules and manipulated by local management to suit their specific needs. Under the sponsorship of the MIS Task Force, local DMMS prototypes are being developed at selected VAMCs (currently Boston, Hines, and Long Beach) to measure: health care needs in terms of clinical services, DRG's and other specific clinical and demographic characteristics of patients; the type and amount of resources required to meet health care needs; and the efficiency and effectiveness of resource utilization. Once local information systems are established, data can be transmitted and summarized in regional and national data base.

Access to its payroll and personnel data from the Agency's Personnel and Accounting Integrated Data (PAID) system and the ability to incorporate PAID data with other data is critical to each hospital's management of resources. The Medical Information Resources Management Office has been representing DM&S in discussions with the PAID Redesign Team to ensure that the ongoing redesign of PAID is responsive to the needs and priorities of our hospitals needs.

IHS

Another significant DM&S ADP activity is the Integrated Hospital System (IHS). The purpose of this Congressionally mandated project is to test the applicability of commercially available hospital information systems to the VA hospital environment. The VA medical centers at Philadelphia, PA, Saginaw, MI, and Big Spring, TX have been selected as the prototype demonstration sites. These facilities were selected as test sites because they were representative of the broad range of VA medical centers, with Philadelphia being the largest, Saginaw, middle-sized, and Big Spring, the smallest.

The Integrated Hospital System project was initiated in order to comply with the FY 1981 Appropriations Act, which directed that VA determine the feasibility of using commercial "off-the-shelf" hospital information systems in VA medical centers. In the FY 1984 appropriations directives, the House and Senate appropriations conferees indicated their concern that the Integrated Hospital System project was not proceeding forward and, therefore, earmarked funds in the FY 1984 VA appropriations bill for carrying out the IHS project.

The IHS contracts that were recently awarded specify that the patient registration, admission/discharge/transfer, clinic scheduling, medical records tracking, laboratory, pharmacy, and order entry and results reporting will be provided as mandatory system modules, with resource allocation and cost accounting, management, nursing, radiology, dietetics, and materials management being provided as optional modules.

The Integrated Hospital Systems test at the three test sites begins this month, will cover a two year and nine month period and will cost $19.7 million. The selected vendors are: Shared Medical Systems (SMS) for Philadelphia, McDonnell Douglas Automation (McAuto) for Saginaw, and Electronic Data Systems (EDS) for Big Spring. These vendors are scheduled to install the patient registration module by January 1985, and the other mandatory functions by September 1985. The optional functions are to be installed by November 1986. The prototype test is scheduled to be completed by May 1987. An evaluation of the stand-alone Integrated Hospital Systems at the three test sites will be conducted by Arthur Andersen and Co. The contract to Arthur Andersen was awarded in June 1984 for $2.89 million and will extend throughout the test period. Arthur Andersen's final report will make recommendations as to the utility of the Integrated Hospital System approach for VA and the possibility of its proliferation to other VA medical centers. Another evaluation RFP is currently planned for release in late 1985. This RFP will seek a contractor to assist the VA in a comparison of the Integrated Hospital System (IHS) with the Decentralized Hospital Computer Program (DHCP).

Mr. Chairman, the DHCP has been an unprecedented success story for the Agency. Our goal of providing critically needed ADP support to VA medical centers is rapidly being met. With a strong support base and the expectation of continued success, we eagerly anticipate the challenges of the coming year. I and the members of my staff with me today will be pleased to respond to any questions that you or members of this committee may have.

STATEMENT OF JACK J. SHARKEY, DIRECTOR, OFFICE OF DATA MANAGEMENT AND TELECOMMUNICATIONS, VETERANS' ADMINISTRATION

Mr. Chairman and members of the subcommittee: I am pleased to appear before this subcommittee to discuss the Office of Data Management and Telecommunications' (ODM&T) Organization, support responsibilities to other departments and staff offices, and fiscal expenditures.

ODM&T's mission is to provide automated data processing and telecommunications support to all VA departments and staff offices. We provide a full range of support services, beginning with equipment planning. We are now replacing the large computers at the Austin Data Processing Center to provide improved data access services for users. We also operate computers in all the data processing centers, which process most of the agency's computer programs. These programs include payroll and personnel, centralized accounting for local management, and the compensation, pension and education system. Other support activities include designing and developing computer applications systems, telecommunications services, long-range planning, and special studies to advise users about the latest technology and services available.

As you know, the Administration has delegated the responsibility for management and control of DM&S medical applications processing to the Chief Medical Director. ODM&T maintains certain centralized system for DM&S, such as the patient treatment file and fee basis systems, and provides other ADP and telecommunications support as requested by DM&S. DM&S prepares its own annual ADP and telecommunications plan, which is incorporated as a part of the agency plan.

ODM&T's telecommunications services include VA-wide technical management and support for all telecommunications sytems. Examples of these systems are telephone systems, teletype systems, data transmission systems, and hospital communications systems which include nurse call, radio paging and closed circuit TV.

ODM&T has an average employment of 1,857, with approximately 425 located in VA Central Office and the remainder in six field stations. The 1985 fiscal year budget authority is $81.5 million. Approximately sixty percent of this amount is for personnel. The remainder is for rent, communications, utilities, miscellaneous services and equipment purchases.

ODM&T is organized functionally to suppport the VA's ADP and Telecommunications Management Strategies, described by Mr. Alvarez:

Systems design and integration management, to which 235 FTE are assigned in Central Office.

Telecommunications, to which 67 FTE are assigned.

Integrated computing support service, to which 113 are assisgned.

ODM&T has three associate directors whose responsibilities correspond to the strategy areas. The associate Director for systems design and integration management is responsibile for designing and developing ADP systems to support VA programmatic needs. He allocates, manages and controls ODM&T central office personnel who design and develop ADP systems.

Some of the major systems supported by this directorate are the target system, paid (the personnel and payroll system), BIRLS (the automated beneficiary indentification and records locator system), and the patient treatment file, which summarizes patient personal, demographic and clinical data.

Other responsibilities include data base administration to minimize duplication, and data base design to promote information access and exchange among systems. For example, a major effort is underway to make DVB data bases, such as BIRLS and CP&E, available to DM&S and the Department of Memorial Affairs.

The Associate Director for Telecommunications supports the Agency's telecommunications strategy. This directorate must provide user friendly communications interfaces to enhance access and sharing of information in Agency data bases. In addition, this data must be transported efficiently and cost-effectively. This responsibility is primarily manifested in the VA data transmission system (VADATS). The VA assumed operational and management responsibility for VADATS from GSA on January 1, 1984. ODM&T has made significant strides in making the network operational, and expects to make the system fully operational in all VA sites by the end of December.

The Associate Director for ADP Policy and Operations Management is responsibile for a wide range of support services to satisfy users' data access needs. In the rapidly changing world of ADP and telecommunications, an up-to-date policy is essential, so both ADP users and providers understand their respective roles. This directorate develops and recommends, to the Associate Deputy Administrator for Information Resources Management, policy which keeps pace with the changing technological environment and the increasing sophistication of our users. In particular, VA policy promotes the capability and use of emerging user oriented technology, and user involvement in ADP and telecommunications planning and development. We have established user groups to provide communications between users and provicers of services, and provide a forum for feedback on Agency policies, plans and other significant issues. Special user groups to focus on specific activities include the telecommunications user group and the time-sharing user group. VA-wide policy, while flexible, permits the Agency to effectively manage its ADP and telecommunications resources.

ADP and telecommunications planning is another support service provided. Planning is done on several levels. Strategic planning ensures that we provide for Agency long-range needs. Strategic planning begins with an examination of departmental goals and objectives. We then formulate strategies, such as those previously discussed, to support those goals and objectives. To assure that the strategies are efficiently and effectively implemented, we develop operational plans.

To encourage and enable VA employees to use the new personal computing technology to its fullest capabilities, we have opened an Information Technology Center (ITC). The ITC provides a wide range of personal computing services, including computer literacy and advanced end-user training in specialized computer applications and software packages. Other ITC services include consultation and technical assistance. The ITC can help VA offices select computer equipment and software packages best suited for their needs, and assist with ordering, installing and maintaining the equipment.

Also, ODM&T is providing a vehicle to improve the integration and efficiency of purely administrative functions among VA organizations through an Agency-level office automation acquisition. As we assessed ODM&T's requirements for a comprehensive and versatile office automation and end user computing capability, we found that many prospective users of these systems were interested in similar capabilities. In response, we developed and are currently nearing award of an office automation system contract, to be available for use by VA organizational elements. The contract will be a preferred means for acquiring office automation, but as Mr. Alvarez stated, it will not be prescriptive. Our policy allows for special needs, such as those of VA medical centers, to be addressed independent of the contract. Advantages of the contract include a guarantee of future expandability to take advantage of technical advances, current and future compatibility between office automation systems, and a signficant cost incentive.

These initiatives, effectively integrated and managed, provide the framework for integrated systems design and effective telecommunications networking. Such services are needed to ensure that information is available when and where needed by VA managers.

The applications systems designed by the central office staff are programmed and processed at the five data processing centers (DPCs) and a satellite service center. The largest Agency data base, the compensation, pension and education (target) data base resides in the Hines, Philadelphia and Los Angeles Data Processing Centers. Another large data base, the beneficiary identification and records locator system (BIRLS) is located at the Austin DPC and the centralized accounts receivable system (CARS) is located at St. Paul DPC. The insurance system is run at the Philadelphia DPC. Overall, the ODM&T Data Processing Centers are involved in payment and collection of about 75 million dollars per day. We are continuing to upgrade the equipment and make software enhancements at our field facilities to satisfy our user's needs for more responsive processing and information flow.

The Austin computer replacement initiative will provide significantly improved services to VA departments and staff offices. The soon-to-be-available contracts will put in place the modern technology, many tools and a progressively available capacity to improve end-user access to data.

We have recently made on-line inquiry to the insurance system available, and are in the process of providing on-line updating of veteran's policy information.

The target network's host computers were recently upgraded, almost doubling the power of each so that we can satisfy current user needs.

The Agency's payroll (PAID) system and management information system (AMIS) are being redesigned to allow local retention and use of data, while also making it available for Agency use as necessary.

Thank you for this opportunity to discuss the ODM&T organization and mission with you.

WRITTEN COMMITTEE QUESTIONS AND THEIR RESPONSE

CHAIRMAN MONTGOMERY TO VETERANS' ADMINISTRATION

Question 1. What would be the total 10-year cost of replacing the DHCP system with the IHS in the 169 hospitals?

Answer. The total 10-year cost of replacing DHCP with IHS in VA medical centers (VAMC) is not known at this time. There was cost information that the three successful IHS vendors submitted with their proposals for optional site installations. For procurement and evaluation purposes, the VAMCs were grouped into three workload categories associated with the IHS test sites of Philadelphia, Saginaw, and Big Spring. Costs given, which did not include discounts, economies of scale, or other factors that would be associated with multiple-site installations, total approximately $2.1 billion. However, these optional site costs under the contract are not the costs which would be incurred. Before an option to install additional sites could be executed, the contracting officer would have to make a determination that the option was the most advantageous method of procurement. Other items that would be considered include the number of additional sites, possibility of volume discounts, modification of specific requirements such as possible deletion or curtailment of certain items, facility management, supplies, software tailoring, training, and possible maintenance provisions. Negotiations with the IHS vendors, considering these and other variables, would lower the costs significantly.

Question 2. Please provide a comparable 10-year cost for the DHCP.

Answer. Comparable costs for DHCP vs. IHS are difficult to ascertain. For example, in the IHS package, all costs are included as all tasks are performed by contract personnel. In the DHCP, medical center personnel who are not designated as "ADP staff" often participate fully in implementing efforts but are not included in the cost figures.

The philosophy of DHCP is a grass-roots approach requiring the commitment of all medical center staff and resulting in a basic system which is flexible, adaptable, and meets the needs of the individual hospital at a reasonable cost but doesn't necessarily represent the most electronically elaborate hospital information system available. For example, CRTs initially purchased for the DHCP are inexpensive though functional and easy to operate. The IHS systems, on the other hand, will utilize such features as micro-computer-based terminals and light pen data entry. While also functional and easy to use, these devices are more expensive.

A fundamental principle of the DHCP is the major role played by the users in the evolution of their systems. Enhanced DHCP modules, whose functions are identified by Special Interest User Groups, are installed at local option and based on local priorities. This affects the overall DHCP costs.

The IHS strategy is based on the premise that a commercial vendor can supply a system as a total package that can easily fit into hospital operations. Further, commercial hospital information systems inherently attempt to achieve a great level of sophistication and to take advantage of the latest technological advances. Since IHS is testing commercial systems, its costs would reflect this approach. In addition, the implementation of the system is primarily provided by contractor personnel. Because the IHS systems are being competitively acquired, modules equivalent to Enhanced DHCP were assumed to be provided to all VAMCs, if such options were exercised, and the IHS costs include these types of modules.

Comparable 10-year costs of DHCP range from just under $300 million to $400 million. The reason for a range, rather than a point estimate, is that the information needs of the hospital system and the technology to meet those needs are both in an evolutionary stage, so that a point estimate lacks realism. Our current "snapshot" of 10-year costs for DHCP is at the bottom of this range ($294.4 million). However, this estimate does not include several considerations. Among them are the effects of out-year inflation, provision for replacements or hardware upgrades that may be appropriate as technology provides more versatile and faster tools, and additional enhancements which will continue to be identified.

HON. ELWOOD HILLIS TO VETERANS' ADMINISTRATION

Question 1. Are you persuaded that VA policy of decentralization in the Department of Medicine and Surgery is fully accepted throughout the Agency and that it is being implemented with dispatch?

Answer. I am confident in saying that all elements within the Agency are supporting the Decentralized Hospital Computer Program (DHCP) and that implementations are proceeding in excellent fashion.

Within DM&S, DHCP is a model exemplifying the progress that can be made when field and VACO elements are united in achieving an ambitious goal. By the end of the calendar year, all facilities will be operational with Initial CORE applications and Full CORE hardware deliveries completed by May 1985. To my knowledge, no other Federal ADP program has accomplished so much so quickly.

In part, this success is the result of excellent support and cooperation DM&S received from elements such as the office of Procurement and Supply and the Office of Data Management and Telecommunications (ODM&T) in conducting the equipment procurements.

The level of DRCP's acceptance is also underlined by the fact that major ADP redesign activities, such as the Agency's payroll system, now include consideration of options involving the use of DHCP.

Question 2. How do your Department employees relate to the Office of Data Management and Telecommunications? What do Department's do and what does ODM&T do? Is there duplication?

Answer. The amount of ADP professional support ODM&T provides to the department and staff offices varies from organization to organization. Generally, the relationship between ODM&T and the user departments and staff offices is that the users make their needs known to ODM&T through the submission of plans and functional specifications. In turn, ODM&T designs programs and maintains the systems to meet these functional needs. The user departments and staff offices are requested each year to submit updates to their long-range plan for automation support. ODM&T works with the users to mesh user plans with resources available in ODM&T to support these plans. Departments and staff offices also employ their own end-user technology. ODM&T supports the use of end-user technology by providing computer literacy training and other assistance through the Information Technology Center. ODM&T also runs five data processing centers and a satellite service center which process a variety of centralized systems supporting one or more users.

Duplication is avoided through compilation and integration with the users of their ADP plans and the division of functions between users and ODM&T. Users focus on preparation of functional specifications and ODM&T does the design and development for the user.

Because DM&S now manages its own ADP program, its involvement with ODM&T is limited to the centralized systems ODM&T maintains for PAID, Patient Treatment File, AMIS, etc., and to working with ODM&T to meet DM&S telecommunications needs. ODM&T also provides whatever support DM&S specifically requests for DHCP.

Question 3. ODM&T field stations will soon be able to access the DVB computers. What is the timetable for this and what is the cost?

Answer. A joint DM&S, DVB, and ODM&T task force is currently designing and implementing procedures for VA medical facilities to access information in the Benefits Delivery Network. This access will be accomplished by utilizing DHCP computers through the VADATS network connected to the Target system. This interface will make available to medical facilities both BIRLS and CP&E master record data for inquiry only. This information will be used to establish eligibility for medical care. It is planned that all inquiries of ths type would be processed through existing security modules of the TARGET system. The associated cost for this effort is estimated at $477,983. The milestone schedule for this project is attached.

As a possible interim solution to the above stated automated process, a test is being conducted between the New York and Buffalo Regional Offices and the Albany Medical Center. In this test, the Regional Office communicates with the DHCP computer at Albany utilizing FTS lines, dial in/out modems, and computer terminals to receive VAMC requests for eligibility information. In turn, a clerk at the Regional Office accesses the DVB Benefits Delivery System, via a Target terminal, to obtain the requested data. The Regional Office clerk then rekeys the necessary information displayed by the Target terminal system on the terminal attached to the DHCP computer. While this capability is functional on a limited scale, the procedure must undergo further evaluation before it could be recommended as a viable interim solution.

PROJECT MILESTONE CHART—PROJECT TITLE: DM&S/DVB INFORMATION EXCHANGE

Activity	Begin	End
Info. exchange conf: ESTB. working groups	May 1984	May 1984.
Task identification	May 1984	June 1984.
DM&S/DVB requirements/dev:		
Benefits Delivery Sys. Inquiry (MINQ/BINQ)	August 1984	April 1985.
Identify Add'l Hardware Req	July 1984	July 1984.
Software Specs./Dev. (VAF 10-7131/7132)	September 1984	July 1985.
Software Specs./Dev. (VAF 21-2507)	October 1984	August 1985.
Software Specs./Dev. CHAMPVA Ind	November 1984	September 1985.
Automatic Elig. Rating Changes	November 1984	September 1985.
DM&S/DVB User Documentation & Training	January 1985	September 1985.
Vadats/Honeywell interface:		
Issue lease order for DPS 6	June 1984	September 1984.
Install VADATS MCTS (2 port) at Hines DPC	August 1984	October 1984.
Install VADATS circuits at Hines	August 1984	November 1984.
Order VADATS 4 port expansion board	August 1984	December 1984.
Install DPS 6 at Hines DPC	November 1984	December 1984.
Develop Application Software—DPS 6	July 1984	January 1985.
Develop VADATS Software—MCTS	August 1984	December 1984.
Conduct Funct. demonstration	January 1985	February 1985.
VADATS/DHCP interface:		
Issue task order to MCTS	July 1984	September 1984.
Dev. DHCP Interface Software	July 1984	September 1984.
Dev. PTF Reformat Module	August 1984	October 1984.
Delivery MCTS S/W	September 1984	October 1984.
All MCTS Installations Complete	March 1984	December 1984.
Test MCTS S/W (Austin)	November 1984	November 1984.
Pilot Test (MCTS/DHCP/VAMC/DPC)	November 1984	December 1984.
Dev. and Deliver Final Interface S/W (MCTS/DHCP)	December 1984	January 1985.
Complex System Test (MCTS/DHCP/DPC)	January 1985	January 1985.
Begin live PTF Trans. via VADATS (Wash. VAMC)	February 1985	
Site Implementation Planning	December 1984	March 1985.
Begin Nationwide Implementation of PFT/VADATS Transmission	April 1985	

Question 4. Does DVB have a timetable for achieving overnight updating of the master record at Hines, Illinois?

Answer. DVB has had several discussions with ODM&T on overnight updating of the Compensation and Pension System. Overnight updating would require dedicated resources from both DVB and ODM&T and would affect other DVB initiatives. Several months would be required to develop feasible approaches. An estimated 4 to 6 months would be required to develop functional and technical specifications and probably require twice that time to program. Based on higher priorities and limited resources, DVB has not established a timetable for achieving overnight update. It should be noted that, currently, the update process is accomplished an average of seven times per month and this meets DVB's timeliness requirements.

Question 5. Did VA advocate the test on intergraded (sic) hospital systems or as you call it "IHS"? Are the earmarked funds sufficient for the test?

Answer. The VA believes it is a prudent management decision to pursue tests of commercial integrated software. The IHS project complies with the FY 81 appropriations act on the issue of having the VA determines the feasibility of using commercial "off-the-shelf" hospital information systems in VA medical centers.

Currently, earmarked funds (FY 84 and FY 85) for IHS consist of $4.2 million in FY 84 that are being used for the Arthur Andersen IHS evaluation contract, and FY 84 and early FY 85 IHS system startup costs. The IHS FY 85 requirements are approximately $6.3 million. Of this requirement, $4.5 million has already been appropriated for FY 85. A reprogramming request is being sent to the Appropriations Committee for an additional $1.8 million to meet the complete FY 85 funding requirements.

The VA will be requesting appropriate funding for IHS in the FY 86 and FY 87 budget process for the remainder of the 2 year, 9 month IHS demonstration tests.

Question 6. What is the timetable for your automated monument application system and what is the projected cost?

Answer. The scope of the Automated Monument Application System (AMAS) has been expanded to incorporate additional subsystem functions to meet the needs of the Department of Memorial Affairs (DMA). The Index/Retrieval function and Bid Evaluation Systems have been added to the AMAS development effort. Development costs are provided for the two phases of development. These costs are estimates for a 5-year period.

Programming development:	
AMAS/Claims and index retrieval	$169,400
AMAS/Orders and bid evaluation	162,000
Government resources—ODM&T	
Contract/project management	54,480
Hardware acquisition	304,000
Hardware maintenance	162,000
Software license maintenance	110,000
Total cost	961,880

Phase 1, Claims and Index Retrieval, will be in production on December 31, 1984. Installation of Phase 2, AMAS/Orders and Bid Evaluation, by March 31, 1985, will complete AMAS development activities and provide DMA with a fully integrated automated monument ordering and control system. Currently, AMAS development is on schedule.

Question 7. Mr. Sharkey testified that ODM&T has 1,857 employees including 425 in Central Office. Why are "contracts" often needed in this operation, and what is their cost as compared to having onboard employees?

Answer. Contracts utilized by ODM&T generally fall into one of three categories. The first of these concerns special requirements where a particular type of expertise, not readily available within ODM&T, is required, or where an impartial evaluation and opinion is required. Examples could be a contract for consulting services, equipment maintenance contracts, or a contract for specialized training. The second category of contracts would be large scale efforts that are expected to be of limited duration. An example would be a contract to reprogram a major system to move from second/third generation equipment to fourth generation equipment. A third category is for production tasks more economically performed by private industry. An example would be data entry tasks. These contracts have been phased into our data processing centers to avoid reductions-in-force.

The cost of contracting for these efforts is far less than would be required to hire new employees. Upon completion of the contracts, the costs are terminated whereas new employees would have to remain with the attendant cost of salary and benefits. Also, the reasons for contracting, i.e., short term requirements, are not valid for acquiring additional staff. Upon completion of the specialized efforts there would not be any functions for these people to perform.

Question 8. How does VA assure that its "Information Technology Center" is used only for official purposes and not for purely personal matters? Is this a problem?

Answer. The Information Technology Center (ITC) has been in operation since January 1984. Based on monitoring by the ITC staff, during the period since its inception until the present time, the ITC has not been used for personal matters by VA personnel.

In order to ensure that the ITC is not used for purely personal matters, one or more staff members are on duty at the center during the operational hours to oversee the center's operation and to assist users in the utilization of ITC equipment and with problem solving.

All ITC users are required to sign a register and state the purpose of their visit. A staff member is always present to assist a visitor/user. No assistance will be provided and no usage of the ITC is permitted if the user's purpose is of a personal nature.

Question 9. VA assumed responsibility for data transmission from the General Services Administration in January of 1984. How do you rate this activity now in terms of quality of service?

Answer. The VA assumed management and operational responsibility for the old GSA ARS data transmission system and the incompleted "ARS Upgrade" system on January 1, 1984, with exception of the terminal system contract which was in default. The ARS was then renamed VA Data Transmission System (VADATS). An RFP was issued immediately for new terminal systems and award was made and installation started in April 1984. Installation is now approximately 60 percent complete, and more than 50 percent of the new terminal systems are actually operational. Completion of the upgrade is scheduled for December 31, 1984. We are on schedule and anticipate the completion date will be met. In fact, orders have already been issued for removal of a portion of the old ARS system, circuits and terminal equipment.

The quality of service and capability of VADATS are far superior to the old ARS, and under VA management, it is directly responsive to our needs. The replacement terminals have far more capacity, capability, and flexibility than those provided by the defaulted terminal system contract. Efforts are already underway to take advantage of this capacity and flexibility, which will allow us to automate some programs, and have an electronic exchange of information between DM&S and DVB far beyond anything previously possible.

STATEMENT OF HON. WILLIAM MAYER, M.D., ASSISTANT SECRETARY OF DEFENSE (HEALTH AFFAIRS)

Good morning Mr. Chairman, members of the subcommittee I want to thank you for this opportunity to discuss the Tri-Service Medical Information System or TRIMIS Program and how that effort interacts with the Veteran's Administration. With me today is Dr. Michael Mestrovich, my Special Assistant for Information Systems Planning and Integration and the Acting Director of the TRIMIS Program Office.

I am aware of the leadership role this Committee has played with respect to the development of automated medical systems in the Veterans Administration and I welcome your interest in our own efforts. In my remarks today, I will review the current shared services relationships between our two agencies, apprise the Committee of my intended direction for Department of Defense medical information systems, and discuss the potential relationships between the Department of Defense and the Veterans Administration during our system development process.

CURRENT ACTIVITIES

Health resources sharing activities between the VA and the DoD are extensive. We currently have 70 agreements between military hospitals and VA medical centers in 50 different geographic locations. The range of shared activities covers the entire spectrum of clinical, ancillary and administrative services. In addition, agreements in education, research and procurement have been exceptionally cost effective for both agencies.

I would like to outline some specific examples of sharing activities in the management information systems area.

The VA provides DoD quarterly data on survivors and semi-annual data on all VA beneficiaries. This information is used to update the Defense Enrollment Eligibility Reporting System (DEERS) database for eligible DoD beneficiaries. This exchange of data has resulted in over 250,000 additional eligible beneficiaries being added to the DEERS.

A joint test of an automated wartime patient regulating system will result in a common communication network and common communication protocols for patient movement between DoD facilities and VA facilities. The first phase of this project will begin in October of this year at the VA Medical Center here in Washington, D.C.

An exchange of clinical documents and software has reduced time and effort for both VA and TRIMIS in preparing information system procurements. Included in this sharing action were TRIMIS functional requirements for laboratory, radiology, pharmacy, and patient administration systems and VA file manager, screen handler and core module software.

TRIMIS and the Air Force are scheduling a test of the VA patient appointment and scheduling software at March Air Force Base in Loma Linda, California to determine its applicability in a military hospital environment.

Finally, the VA hospital in Baltimore is sharing the use of the TRIMIS Computer Assisted Practice of Cardiology (CAPOC) system located at Walter Reed Army Medical Center. Additional sharing of this valuable diagnostic system with other VA hospitals is anticipated.

I would like to note that the scope of our sharing activities would not have been possible without this Committee's foresight and assistance in the passage of the VA/DoD Health Resources Sharing and Emergency Operations Act of 1982.

FUTURE DIRECTION

Since coming to DoD nearly one year ago I have taken a keen personal interest in our medical information systems and I readily admit that I was not totally pleased with what I found. We have had problems in both systems development and administration and I have taken a number of steps to identify and correct them.

I directed a thorough review of the current TRIMIS acquisition strategy by members of my staff, the VA, and the GAO, and suspended all procurement activities for a composite medical information system until this review is complete. Clearly, lessons learned by the VA over the past few years will be invaluable in developing our own strategy.

Put simply, my objective is to offer our hospital commanders automated systems which can be operational in the near future and which will be practically useful to them. In addition, these systems must be cost effective, have a reasonable life expectancy, and must be compatible with other DoD systems. This last criterion can be difficult, but it is critical if these systems are to support our primary mission which is medical readiness.

USE OF MUMPS

The VA's use of the MUMPS software in developing hospital information systems has laid valuable groundwork for our own efforts. Its application to our systems is a major part of the review I just mentioned. While it is too soon to determine the extent to which MUMPS can and should be utilized, preliminary indications are that certain elements of MUMPS may have direct application to our needs, and in those instances where they do, I will make every effort to take advantage of these. For example, the preliminary design for our new Quality Assurance software system utilizes the MUMPS File Manager.

Once again, Mr. Chairman, we welcome your interest and continued support and want to reaffirm our dedication to the principles of the Sharing Act in all areas of health care resources. Dr. Mestrovich and I will be pleased to answer any questions you may have.

STATEMENT OF PAUL W. SCHAFER, M.D., EXECUTIVE DIRECTOR OF THE NATIONAL ASSOCIATION OF VA PHYSICIANS (NAVAP)

Mr. Chairman and members of the Committee: Even if Veterans' Administration and Department of Defense Health Resource Sharing Emergency Operation Act (PL 97-174) had been enacted by Congress and signed into law by the President, even if the Department of Defense's Directive did not require that new automated information systems be acquired from contractors only after it had been determined that no existing system could be used or economically modified to serve the Agency's component needs, we would still need DoD officials to look very carefully at available, public domain capabilities before rejecting these in favor of a major procurement of commercial systems design, development and other services. And we would expect a level of inquiry concerning available alternatives commensurate with the magnitude of the expected cost of the acquisition; in this case, the DoD project has been estimated to cost as much as $4,000,000,000.

Unfortunately we have not witnessed either common sense, compliance with DoD Directives, nor respect for the law of the land in the DoD TRIMIS procurement officers evaluation of the feasibility of following the VA DHCP approach in automating the information processing functions of DoD Hospitals and Clinics. The reports and study documents that we have seen on this evaluation project indicate that the essential facts have not been obtained. Moreover, information that has been obtained has been misinterpreted, or misunderstood. In short, an objective evaluation of the feasibility of using the VA DHCP approach in VA Medical Centers may have been begun, but it certainly has not arrived at sufficient information or clarity of the issue to serve as a basis for a multi-billion-dollar decision.

1. The DoD evaluation of the VA DHCP approach and software technology was inadequate.—The TRIMIS evaluation of the VA DHCP did not arrive at reasonable estimates of what it would cost for the DoD to use the VA DHCP approach in its hospitals. Without a cost estimate with some degree of reasonable accuracy the DoD evaluation simply has not been completed.

In addition, the evaluation compared the DoD functional specifications with the applications the VA currently has fully operational in VA Medical Centers. The contractors are not expected to have those functional specifications implemented for two years, but the VA appears to have been faulted for not having all of these specifications running at the present time.

But apart from this lack of balance, the TRIMIS review focused just on cost savings that might be realized in the software development process. The review ignored the cost savings that would be realized in software maintenance over the systems life cycle and ignored the savings in hardware size and complexity that MUMPS achieves.

In addition, the evaluation ignored the savings in operation expenses that result from the direct operations and management of the system by professional and administrative users. If there is one fact that is paramount in the cost-effectiveness of the VA DHCP approach it is the elimination of much of the expense associated with staffing ADP operations. The evaluation simply does not come to grip with the reality of user development and requirements of applications using the File Manager software tools. This capability changes radically the way in which formal functional specifications are to be used.

Underlying the TRIMIS approach is an assumption that specifications have to be rigid. The new automation-based paradigm of software management embodied in the VA DHCP removes the technical contraints that have led system developers to require rigidity in specifications. Therefore, the TRIMIS evaluation is based on a restrictive assumption derived from obsolete software technical constraints.

Finally, the recommendations contained in the Mitre study and in the Peer Review Group Report do not follow logically from the facts or reasonable premises stated in these reports.

The Peer Review Group assertion that the VA DHCP approach was not applicable outside of the VA was made in ignorance of the extensive and rapidly growing adoption of this approach in non-VA hospitals here and abroad.

In conclusion, the TRIMIS evaluation can not be considered to have developed a factual basis for a multi-billion-dollar decision.

II. The inclusion of mention of the availability of VA software in the TRIMIS request for Proposal is neither an adequate substitute for the objective evaluation of the cost effectiveness of the VA approach called for Congress and required by DoD Directive, nor is it an effective way of measuring that the potential cost savings of the VA approach will be brought to the attention of the DoD through the vendor proposals.—The proposed inclusion of explicit mention of the VA software as an optional approach a contractor may bid in a proposal will not substitute for an objective study of the cost effectiveness of this system. Such a cost comparison cannot be best dealt with by industry as part of the competitive process. During the past year, it has become clear that DoD's procurements through the competitive process resulted in spare parts and standard hardware items such as hammers costing many times their price in any ordinary hardware store. Competitive procurements through Request for Proposals are not a substitute for independent cost analyses. This fact is implicit in the DoD Directive that states explicitly that the procurement of design for new Automated Information Systems may not be undertaken until the DoD component has determined that no existing system can be used or economically modified to satisfy the components validated functional requirements:

"A new Automated Information System (AIS) may be designed only after it has been determined that an existing AIS, including one available from another DoD component or off-the-shelf from industry, cannot be used or economically modified to satisfy validated functional requirements." (DoD Directive D 7920.1, Enclosure 2 "Life Cycle Phases and Policies" Section C.D.c)

III. The study to be undertaken by DoD should address the VA DHCP approach and software technologies in their full dimensions, without restrictive premises as in the Mitre study.—The Mitre study did not address the real issue of the cost effectiveness of the VA DHCP approach because of the restrictive premise that only those aspects that were relevent for third party contract providers were to be considered. DoD superimosed on what was supposed to be an objective review of the applicability of the VA DHCP for DoD hospital information systems the requirement that all system support would be excluded from having a direct role in designing or tailoring information systems to fit their own unique needs. All such tasks were to be contracted to the single contractor that would provide system support to the three military services.

This restrictive premise virtually destroys and prevents an objective assessment of the cost effectiveness of the VA DHCP approach as an integrated system management methodology, oriented toward achieving maximal cost savings in health services, and maximal improvement in quality of care. One of the principle capabilities of the VA DHCP is its support for professional and administrative users in enabling them to tailor the applications to fit their specific needs and to build special purpose applications for monitoring costs and improving the quality of care.

The support services needed from contractors is greatly reduced under the VA DHCP approach, since the tools and methods are placed in the hands of the professional and administrative users. Moreover, the facility with which users can design and tailor their own working environment with the VA DHCP capabilities will continue to improve over time, further diminishing the need for contractor support.

IV. In the interim, while DoD is conducting an objective study, the Military Services should be allowed to introduce VA DHCP based information systems for their priority needs.—Many of the information systems applications planned for the DoD medical services would bring about cost savings and quality of care improvements quite rapidly. These economic and quality benefits should not be deferred while the DoD study is being conducted. If the study indicates that DoD should not adopt the VA DHCP approach, then the design and development phases will not result in information systems modules being available for the DoD Medical Facilities for two or more years, according to the TRIMIS plan and timetable. During this time, the priority application can be supplied by VA DHCP modules at minimal costs. As the contractor supplied systems are introduced into the military hospitals the equipment used for VA DHCP-based system can be converted to other uses or excess. In either case, the economic benefits will have been realized for a significant period of time without termination expenses.

On the other hand, if the study reveals that DoD should adopt the VA DHCP approach, the installed system would provide a starting point for facilitating expansion of this capability to other applications.

What is most important, therefore, is to lose no time in providing the basic system support that the VA DHCP modules can offer very rapidly. Some of these services can be offered through telecommunication linkage to VA Medical Centers. During the next two years there will be a surplus capacity on the VA computer system. As that surplus is absorbed by VA useage, the DoD program will be able, no matter which alternative is chosen to absorb the services that were being provided on the VA systems. In those cases where useage of the temporary surplus capacity of VA Medical Centers would be awkward for DoD Medical Centers, then modest computer configurations should be acquired to provide the VA DHCP capability directly for these Medical Centers.

STATEMENT BY DAVID J. MARCUS, VICE PRESIDENT, MICRONETICS DESIGN CORP.

I am a MUMPS vendor. I see the MUMPS world from a commercial perspective. Sensing an exploding market, we at Micronetics have developed a MUMPS Compiler for a wide range of hardware, ranging from a single-user Personal Computer version, to a multi-user UNIX version. The Personal Computers we support include the IBM/PC and its many derivatives, the WANG/PC, the DEC Rainbow, Tandy T2000, and many others. We also provide a multi-user MUMPS compiler under UNIX for systems such as the Motorola 68000, the Perkin-Elmer 3200 family of processors, the DEC VAX machines, etc. We have been in business for nearly 4 years. Our clients include some of the Fortune 100 companies. We have several contracts with large firms to distribute our MUMPS on their hardware throughout the world with several more under negotiation. Since we have started, we have seen a dramatic increase in the use of MUMPS, much of it attributable to the growth of MUMPS usage throughout the Veterans' Administration. With the advent of our MUMPS compiler for the Personal Computer, we see many users who would otherwise not be classified as programmers, use the VA's File Manager to develop some fairly impressive applications. These same users would otherwise shun the computer. We have seen users who have been frustrated after many futile attempts at coding applications in BASIC or PASCAL, turn to MUMPS and "whip off" the application in record time. This usage has not been limited to the medical sector. Analysis of our customer base reveals, for example, that while the predominant usage of MUMPS domestically is in the medical field and related areas, there are many applications using MUMPS and the File Manager in other diverse fields. We ourselves are now wrapping up a large project for a prominent national company in the alarm industry that could not have been completed on time without File Manager, given the requirements and the time constraints. Internationally, most MUMPS applications that we see tend to be in the commercial sector for such things as inventory control, financial analysis, data base management, and so on.

With all the glory of MUMPS, there are still some difficulties in promoting it. Most of these difficulties are related to its origin, its name, and its users. Many people reject it purely on the basis of its name or the incorrect stigma that it's a "medical language." Some reject MUMPS on the basis that since they have not heard of MUMPS before, it clearly can't be any good. Finally, others reject MUMPS as being too expensive or being to slow to run. That may have been the case in the past, but is certainly no longer true today. Underlying many of these problems if the fact that MUMPS is not being evaluated with the proper purpose in mind.

The time has come to rationally and objectively evaluate how and where the MUMPS language can best be utilized in the life cycle of an application system. This cycle includes design, implementation, maintenance, and of course, delivery of the application services to the end users. All too often, we find that for new applications the choice of languages and systems are dictated by momentum generated by precedents. Because COBOL or FORTRAN was used on another project (which may not be at all related to the new application) they may be selected again even if a "shoe horn" is required to make the language fit.

In other circumstances languages are specified because programmers are "a dime-a-dozen" and hence easy to find. At times a slick salesman promises "any support" needed or more correctly "needed to SELL" a piece of hardware. We even hear the excuse that some languages area a "safe bet" which is not likely to be questioned by others. This list of "official reasons to choose a particular language for an application" is quite lengthy and amusing indeed. However, the key question of suitability is rarely asked. How often have you seen a statement in the analysis of a system mention that several EXISTING products were evaluated and found not suitable? How many times have you seen an evaluation that estimated the cost of an application based on different languages used? I have seen none. Existing systems are usually dismissed off-hand due to the "not invented here" syndrome. The language to be used is usually "a given" and not an option that is seriously considered.

I would like to offer a simple analogy between computer languages and cars. They both convey things. Cars convey materials, while computer languages convey instructions to the hardware. Continuing with this analogy a bit we see that some cars have big engines, some small, others use diesel fuel while many use gasoline. Some are equipped to carry heavy loads, others are equipped for speed. Similarly, some computer languages are designed to facilitate scientific calculations (e.g., FORTRAN, APL) while others are ideally suited for large database information management (e.g., MUMPS). Some are targeted towards artificial intelligence (LISP, PROLOG) while others deal with lack of machine intelligence (Numerical Control). Each language provides the programmer a simple straight forward way to express the action to be performed by the computers.

This analogy, of course, can be stretched only so far. However, the moral of this story is that like cars, computer languages come in different makes and models. Each serve a particular function well. But in the wrong environment they function poorly. We would hardly consider getting a 10 ton Mack truck for commuting into DC to work on the Hill, nor would we conversely consider buying a four cylinder sub-compact to tow heavy construction gear. Similarly we would hardly consider using MUMPS to simulate a nuclear reactor in three dimensions, or consider using FORTRAN or COBOL to build a system as flexible as the File Manager.

Finally, I would like to illustrate the importance of selecting the correct language by posing the following: Imagine, if you will, what if building architects had to use words instead of blue prints! Imagine what if all U.S. air traffic controllers spoke no English. I need say no more.

The message by now should be abundately clear. Every computer language offers benefits and drawbacks. To ignore the benefits of the software technology offered by MUMPS, may be a case of winning a battle but losing the war.

WRITTEN COMMITTEE QUESTIONS AND THEIR RESPONSE

CHAIRMAN MONTGOMERY TO DOD

Question 1. It is our understanding that the TRIMIS CHCS development and procurement strategy has changed somewhat as a result of the CHCS reevaluation process initiated by you. Would you describe the current design, development and implementation strategy?

Answer. The revised strategy which will be presented to the Major Automated Information Systems Review Council on October 15, 1984 for their approval includes the following:

The Composite Health Care System contract will be awarded to a single vendor to modify an existing capability which will be implemented in all Military medical treatment facilities.

At this time, based on technical, cost and schedule considerations it appears that either commercially available or MUMPS-based software are feasible solutions.

The Composite Health Care System will be implemented in phases based on prioritization of functional requirements.

The implementation schedule for the Composite Health Care System has been accelerated with the first phase to be deployed to all facilities within 24 months of contract award.

Question 2. What modules are you planning to implement during the first procurement phase?

Answer. The Composite Health Care System procurement will be for a single contractor who will implement the system in four phases. The first implementation phase will include Patient Registration, Defense Enrollment Eligibility Reporting Interface and Patient Appointment and Scheduling.

This will be rapidly followed by the second phase which will include Admission, Disposition and Transfer, Clinical Records, Pharmacy (less Inventory Control), Laboratory (less Blood Bank and Anatomical Pathology), Clinical Nursing, Order Transcription/Results Reporting, and Retrospective Quality Assurance for Inpatients.

Both of these phases will be deployed to all facilities within 30 months of award.

Question 3. What is the estimated life-cycle cost of the first phases of the system?

Answer. The information follows:

[Dollars in thousands]

	Phase 1	Phase 2
System development and data rights	$11,563	$2,813
Site preparation	9,100	
Supplies (initial)	28,175	
Supplies (recurring)	10,859	31,926
Computer operations	7,235	25,657
Hardware (purchase, installation, maintenance)	39,094	54,526
Communications (purchase, installation, maintenance)	30,032	44,508
Implementation and training	4,398	17,593
Total	140,456	177,023

Question 4. We understand that DoD contracted with MITRE Corporation to assess the feasibility of using the VA's MUMPS-based Decentralized Hospital Computer Program (DHCP) as an alternative to the DoD's Composite Health Care System (CHCS). The results of this study were presented to DoD in a briefing document. Would it have been preferrable to prioritize the CHCS functional requirements before comparing them to VA's DHCP capabilities?

Answer. No. Prioritization was not necessary prior to conducting the comparison. The issue here was the degree of match between the VA's Decentralized Hospital Computer Program and the total target DoD requirements. I was more concerned about the risk of achieving the total functional goal, rather than the first phase of the goal.

Question 5. What was the degree of compatibility between the VA's DHCP capabilities and the CHCS functional requirements?

Answer. MITRE found a 30% match between the Veterans Administration capability and the Composite Health Care System requirements planned for the large facilities and a 35% match for the small facilities.

Question 6. Did MITRE estimate the cost of adapting the VA's DHCP software to meet DoD's needs?

Answer. No. Within the limited timeframe of the study, MITRE was not able to quantify this cost with sufficient certainty to report. Results of the other activities did, however, provide MITRE with sufficient data to formalize conclusions and recommendations. Specifically, MITRE did not find sufficient reason to warrant mandating use of the Veterans Administration software in the Tri-Service Medical Information Systems Composite Health Care System acquisition. One of the reasons for this conclusion was that only 2% of the expected cost of the Composite Health Care System could be impacted by the use of the VA software and that costs of documentation and required modifications could possibily reduce any advantages to the use of the VA software.

Question 7. What were MITRE's final recommendations about using the VA's DHCP software in the development of the CHCS system?

Answer. MITRE recommended in their report that: (1) the Tri-Service Medical Information Systems Program provide all available VA Decentralized Hospital Computer Program software and documentation for optional use by vendors bidding the Composite Health Care System; and (2) the Composite Health Care System be structured for incremental software development and installation.

Question 8. What is the estimated total life cycle cost of the TRIMIS system when installed in the planned DoD hospitals?

Answer. The life cycle costs for the Composite Health Care System through 1992 at 166 sites follow.

COMPOSITE HEALTH CARE SYSTEM LIFE CYCLE COSTS

	Dollars in thousands	Percent
System development and data rights	$14,375	2.0
System maintenance	11,156	1.6
Site preparation	9,100	1.3
Supplies	119,560	17.2
Computer operations	70,416	10.1
Hardware	213,349	30.7
CPU purchase		
Terminals purchase		
Hardware installation		
Maintenance		
Communications	191,029	27.6
Equipment purchase		
Installation		
Leased lines		
Maintenance		
Implementation and training	65,975	9.5
Total	694,930	100

Question 9. What is the present time table for the TRIMIS contract, schedule and the system on-line and in operation?

Answer. The current Composite Health Care System schedule is as follows:

	Start date	Stop date
System procurement	January 1985	December 1985.
System modification/development (phase 1)	January 1986	June 1986.
Install phase 1 in 166 sites	July 1986	December 1987.
System modification/development (phase 2)	January 1986	December 1986.

—Continued

	Start date	Stop date
Install phase 2 in 166 sites	January 1987	June 1988.
System modification/development (phase 3)	January 1987	June 1988.
Install phase 3 in 166 sites	July 1988	June 1990.
System modification/development (phase 4)	July 1988	June 1990.
Install phase 4 in 166 sites	July 1990	December 1992.

Question 10. In your planning, have you considered the survivability of a decentralized ADP system versus a centralized system, especially in the context of a system in the medical life support of battle casualties?

Answer. Yes. The Tri-Service Medical Information Systems Program has considered the survivability of the Composite Health Care System in mobilization, especially in the context of a system supporting the transportation and treatment of battle casualties. Current plans include the linkage of civilian and VA hospitals to Military hospitals through the Composite Health Care System which is linked to Armed Services Medical Regulating Office through the Defense Enrollment Eligibility Reporting System Program. With these linkages, battle casualties will be routed by Armed Services Medical Regulating Office to the appropriate treatment location including Military, civilian and VA facilities. In support of this mission, the Tri-Service Medical Information Systems Program is participating with the Defense Enrollment Eligibility Reporting System Program and the VA in the design, development, and testing of the Automated Medical Regulating System which will compliment the Armed Services Medical Regulating Office activities. Phase 1 of this effort is currently being tested in six sites.

Question 11. The VA-DoD Health Resources and Emergency Operations Act required the VA to provide substantial backup support to DoD health care facilities during time of war. Do you feel that a medical ADP system common to VA and DoD would enhance the capabilities of both systems to coordinate patient care and resource sharing?

Answer. Yes. I agree that it is essential that VA provide substantial backup support to DoD health care facilities during contingency situations. The key Automated Data Processing elements essential to enhancing this support are a common set of definitions for medical data, standard communication protocols, and standard report formats. The Tri-Service Medical Information Systems Program is now working with VA personnel to ensure that these necessary elements are a reality.

Question 12. Do you see any value in establishing a project to move towards a common set of data elements—that is a common data element dictionary—throughout the Federal health care sector? I am referring to VA, DoD, and the Indian Health Service which represent the three direct care systems operated by the Federal Government?

Answer. Yes. The DoD goal is to establish commonality between DoD and VA to enable sharing of required data. We are identifying existing data in each system and are working toward standardizing the structure of data to facilitate the exchange of data between medical facilities.

Contact with the VA has been initiated by the Tri-Service Medical Information Systems Program on several occasions (7, 14, 20, 21, 24 September 1984). An agreement was made to exchange data dictionaries. The Composite Health Care System data dictionary was provided to Dr. Ingebord Kuhn, San Francisco VA Medical Center, on September 14, 1984. We have been told that we can expect the VA's data dictionary by the end of November 1984.

A meeting is scheduled for November 8, 1984 between the VA and DoD functional proponents to discuss identifying common functional requirements.

CHAIRMAN MONTGOMERY TO DAVID J. MARCUS, VICE-PRESIDENT, MICRONETICS DESIGN CORP.

Question. We have been told that one consideration for the TRIMIS decision to use the VA MUMPS and File Manager System is whether it can be interfaced with the DOD Logistics, Personnel, and Financial Management Systems. From your experience with large mainframe IBM systems, communications systems, and your use of MUMPS and the VA File Manager, what is your estimate of how difficult it would be to interface the VA File Manager system with the DOD Logistics, Personnel, and Financial Management Systems?

Answer. My experience is with large mainframe IBM systems as well as MUMPS and the VA File Manager. However, since I'm not specifically familiar with the DOD systems, I will answer the more general question of "how difficult is it to interface MUMPS applications with non-MUMPS applications on large mainframe IBM systems?"

The degree of difficulty is directly related to the type of interface required. Interfacing can range anywhere from occasional exchange of data (perhaps via magnetic tape) to "tightly coupled" real-time sharing of computerized databases.

When interfacing at a magnetic tape level, the degree of difficulty amounts to developing a translation program that takes a MUMPS data tape and reformats it to match the database on the IBM. This effort is one time and usually quite simple as long as both the MUMPS and the IBM databases store the same information.

The next level of interfacing is to dynamically communicate between the MUMPS system and the IBM system. This allows near "real-time" exchange of data. The effort required includes the development of the communications software on both the MUMPS and the IBM systems. This is a moderately difficult task. As the "intimacy level" of this connection grows, so does the effort. However, it is important to note that it is not substantially different than interfacing a COBOL application on one IBM system with another application on a different IBM system. MUMPS does not materially change the degree of difficulty.

The hardest to do is to share data directly. Where both the MUMPS application as well as the non-MUMPS application share one copy of the database with both dynamically updating the information is the database. Such a "real-time" connection is quite difficult to accomplish especially since the internal format of MUMPS databases is usually quite different from that used on standard IBM systems. This type of interfacing is nearly impossible unless the MUMPS vendor provides the programming interfacing support to allow a non-MUMPS application to access MUMPS databases directly.

Finally, I would like to point out that a very satisfactory workable and productive system could be based on exchanging data via magnetic tapes or via diect communications link. Massive rewrites of existing applications are not required. As long as you do not require that as soon as a change is entered on the IBM system is instantly refelcted in the MUMPS databases (or vice-a-versa), the MUMPS and non-MUMPS application can coexist in harmony.

Generally, enhancements such as enhanced features to an existing application are best done in the language of the existing system. Entirely new systems can be written in a different language as long as there is a provision for exchanging common data with existing system.

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